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REVISED UPPER-AIR WIND DATA FOR WALLOPS ISLAND BASED ON SERIALLY COMPLETED DATA FOR THE YEARS 1956 TO 1964

by James A. Cochrane, Robert M. Henry, and William L. Weaver

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CONTENTS

Page

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SUMMARY

Estimates of fundamental statistical parameters describing the velocity distribution of upper-air winds at Wallops Island have been computed from a nine-calendar-year sample of rawinsonde observations collected four times daily. The parameter estimates are improved over previous estimates because the sample includes more recent data which have been serially completed and checked. Because sufficient rawinsonde data were not available directly from Wallops Island, the sample consisted of rawinsonde data collected at U.S. Weather Bureau stations at Norfolk, Va., and Washington, D.C. The following parameters are tabulated for monthly and annual periods: means and standard deviations of the east-to-west and south-to-north components of wind velocity, and correlation coefficients (interlevel, intralevel, crosslevel, and time-lag correlations).

The tabulated parameters are sufficient to define the vector normal distribution, and several methods of computing wind-speed and wind-direction probabilities by using this distribution model are summarized. A special problem arises when wind-speed and wind-direction probabilities for individual calendar days are computed by using parameter values tabulated for calendar-month periods; that is, a significant sampling error is introduced (especially for single calendar days falling at the beginning or end of a calendar month). To overcome this problem, a method of interpolating the calendar-month averages of the parameters is suggested.

INTRODUCTION

The launching of vertically rising vehicles from NASA Wallops Station has created a need for an improved quantitative description of the upper-air winds at Wallops Island, Va., for both design and operational purposes. Results from studies based on empirical methods (for example, the cumulative percentage frequency method) are usually limited in both scope and accuracy. Accuracy in most cases is limited in the region of extreme wind speed. An earlier study (ref. 1) demonstrated that the vector (that is, bivariate) normal distribution is a good model of the wind-velocity distribution at Wallops Island, Va. The wind-speed and wind-direction probabilities computed by assuming the vector normal

distribution are not unduly affected by limited or extreme values of the data as are the empirical methods. For this reason, several special cases of the vector normal distribution are described. A more detailed discussion of procedures for computing wind-speed and wind-direction probabilities using the vector normal distribution is given in appendix A. In order to use statistical methods such as the vector normal distribution, accurate estimates of certain fundamental statistical parameters are needed. Accordingly, considerable effort was expended to develop an improved sample of wind data for Wallops Island.

The rawinsonde system which is customarily used in winds-aloft measurements was not regularly used at Wallops Island until August 1, 1965. For this reason, in order to obtain a wind sample of sufficient size to permit accurate estimation of parameter values, it was necessary to use data from nearby stations (Norfolk, Va., and Washington, D.C.) to approximate the data for Wallops Island. Previously published values of wind statistics for Wallops Island (ref. 1) were based on about an eight-calandar-year sample of rawinsonde measurements made four times daily at both the Norfolk and Washington stations. Although work described in reference 1 verified the accuracy of a procedure for interpolating the Norfolk and Washington data to obtain data for Wallops Island, the rawinsonde records for Norfolk and Washington were not serially complete (that is, data for certain altitude levels and times of day were missing) because of limitations of the rawinsonde system (as discussed in ref. 2). A serially incomplete sample was also used for computing (empirically) the cumulative percentage frequency for selected wind-speed groups as presented in reference 3 and in a work entitled "Terrestrial Environment (Climatic) Criteria Guidelines for Use in Space Vehicle Development, 1966 Revision" by Glenn E. Daniels, James R. Scoggins, and Orvel E. Smith of the NASA Marshall Space Flight Center. The missing data in the serially incomplete rawinsonde records bias the values of certain wind statistics (for example, the mean and standard deviation) as well as the empirical tabulations of cumulative percentage frequency. Since the missing data usually result from a combination of high wind speed and high altitude level, values of the mean and standard deviation of the wind speed components at higher altitude levels tend to be underestimated. Preliminary calculations based on the Wallops Island data indicate that the value of zonal (west-to-east) component of the mean wind for certain calendar months may have been underestimated by as much as 20 percent.

In order to improve the accuracy of the estimated values of the mean and standard deviation, a nine-calendar-year period of record for both the Norfolk and Washington data were serially completed under a Langley Research Center contract with the National Weather Records Center of the Environmental Sciences Services Administration. Serial completion is a process whereby professional meteorologists insert values for missing data by interpolation, extrapolation, or use of data from nearby stations; this process is described in more detail in appendix B. In addition to being improved by serial

completion, the sample was better than the samples used for computations in earlier works (refs. 1 and 3, and the data of Daniels, Scoggins, and Smith of the Marshall Space Flight Center) because more recent data were used and because all the data were checked.

The tabulated data presented in this report include values at 1-kilometer intervals up to an altitude of 27 kilometers for the following statistical parameters:

(1) Mean wind velocity for the zonal (west-to-east) and meridional (south-to-north) wind components (expressed in m/sec) at selected altitude levels

(2) Standard deviation of the zonal and meridional components of wind velocity (expressed in m/sec) at selected altitude levels

(3) Interlevel correlation coefficient between the zonal (meridional) component of wind velocity at one altitude level and the zonal (meridional) component of wind velocity at another level

(4) Intralevel correlation coefficient between the zonal and meridional components of wind velocity at the same altitude level

(5) Crosslevel correlation coefficient between the zonal (meridional) component of wind velocity at one altitude level and the meridional (zonal) component of wind velocity at another level

(6) Time-lag correlation coefficients (that is, stretch-vector correlation coefficients) indicating the persistence of wind velocity for time lags of 6, 12, . . ., 72 hours at selected altitude levels.

These parameters are tabulated for monthly and annual periods. Although the monthly and annual tabulations provide a compact representation of statistical data, such tabulations do not always provide enough information about the values of the parameters on a particular calendar day (especially at the beginning or end of a month). In some cases, the use of calendar-month averages (that is, a step function) has been shown to lead to erroneous launch decisions (ref. 4). To overcome this problem, the actual seasonal variations in parameter values were studied. Examples of seasonal patterns in means, standard deviations, and correlation coefficients are presented in appendix C. An interpolation scheme for obtaining accurate parameter estimates for a given calendar day is also presented.

SYMBOLS

A constant in equation (A2)

B constant in equation (A2)

$c = \sigma_v/\sigma_u$

$e^{-\alpha\tau}$	negative exponential function of time lag τ
$f(\tau)$	function of time lag τ
G	constant in equation (A1)
N	number of observations in statistical sample for a single station
N_I	number of independent observations in statistical sample
N_{jk}	number of independent observations (prior to serial completion) used to compute $x(u_j,u_k)$
P( )	probability of designated variable or variables being within specified limits
R	radius of circle about origin of coordinate system or nondimensional velocity normalized by σ_u, V/σ_u
$\overline{R} = \overline{V}/\sigma_u$	
r	any type of correlation coefficient
$r(u_i,u_j)$	interlevel correlation coefficient between zonal wind components at altitude levels i and j
$r(v_i,v_j)$	interlevel correlation coefficient between meridional wind components at altitude levels i and j
$r(u_i,v_j)$	crosslevel correlation coefficient between zonal wind component at altitude i and meridional component at altitude j (called the intralevel correlation when $i = j$)
r_{uv}	abbreviated notation for intralevel correlation, $r(u_i,v_i)$
$r_{t,t+\tau}$	time-lag correlation coefficient (stretch-vector correlation) between wind-velocity vector at time t and at time $t + \tau$ at a particular altitude level
r_i	value of $r_{t,t+\tau}$ for a $\tau = i \times 6$ hour lag period at a selected altitude level j

r_i' value of $r_{t,t+\tau}$ for a $\tau = i \times 6$ hour lag period at a selected altitude level k

s sample standard deviation, m/sec

S region in u,v-plane

u zonal (west-to-east) wind-velocity component at a particular altitude level, m/sec

$\bar{u}$ mean or average of u for a selected time period

u_o observed value of u

u_t value of u at time t

$\hat{u}_t$ forecasted value of u_t

v meridional (south-to-north) wind-velocity component at a particular altitude level, m/sec

$\bar{v}$ mean or average of v for a selected time period

V magnitude of vector wind velocity, m/sec

$\bar{V}$ magnitude of vector mean wind

$\bar{X}$ sample mean

Z random variable in standard normal distribution, $(\bar{X} - \mu)\Big/\sigma\Big/\sqrt{N}$

$Z_{\alpha'/2}$ value of Z such that integral of standard normal density from $Z_{\alpha'/2}$ to ∞ equals $\alpha'/2$

Z' random variable in Fisher's transformation of r, arc tanh r

α empirically determined constant in function $e^{-\alpha\tau}$ fitted to the time-lag correlation coefficients, 1/hr

α' probability risk level used in computing confidence intervals

θ direction from which wind blows, positive clockwise from north, deg

$\overline{\theta}$ direction from which vector mean wind blows, positive clockwise from north, $\tan^{-1}\overline{u}/\overline{v}$, deg

μ mean of designated probability distribution

σ standard deviation of designated probability distribution

$\sigma_{\hat{u}}$ forecast standard error for u_t

Σ summation over sample size N

τ time lag, hours

ϕ angular difference between vector mean wind and arbitrary wind, positive clockwise, $\theta - \overline{\theta}$, deg

Subscripts:

NOR data for Norfolk, Va.

WAL data for Wallops Island, Va.

WAS data for Washington, D.C.

i,j,k arbitrary integer values, that is, 1, 2, . . .

t identifies a specific time

τ a specific lag interval, hours

u identifies the zonal (west-to-east) component

v identifies the meridional (south-to-north) component

DATA SOURCE

Sufficient wind-sampling data were not available for Wallops Island so measurements made at two adjacent geographical locations (Weather Bureau Observatories for Washington, D.C., and Norfolk, Va.) were used. The basic data for these two stations are stored at the National Weather Records Center (NWRC), Asheville, North Carolina. Data for the period of record from January 1, 1956, to December 31, 1964, were serially completed by personnel at NWRC by using the procedure described in appendix B.[1] During the period of record, all rawinsonde measurements had been made with the AN/GMD-1 system at the following Greenwich mean times:

Prior to May 1957	0300, 0900, 1500, 2100
After May 1957.	0000, 0600, 1200, 1800

Data were recorded at 1-km intervals from the surface to 27 km.

ACCURACY OF DATA

An uncertainty exists regarding the basic measurements made with the rawinsonde system because of equipment limitations. References 2, 5, and 6 present discussions of possible observational errors in wind-velocity measurements resulting from use of the rawinsonde system. Unfortunately, there does not seem to be unanimous agreement among those who have studied the accuracy problem as to the magnitude of the possible system and data reduction errors. It is known that under certain conditions, the magnitude of the wind velocity can have errors up to about 30 m/sec and that directions can be as much as 180° in error. Errors of such magnitude are rare. As noted by Tolefson (ref. 2), the errors depend on both the altitude of the balloon and the elevation angle from the ground receiving station to the rawinsonde balloon, major errors occurring at low elevation angles. Nevertheless, it is believed that for altitudes below 16 km, data should have errors not exceeding the generally accepted values for rawinsonde data which are as follows:

Wind speed (when speed $<$25 m/sec), m/sec	$\pm 1\frac{1}{4}$
Wind speed (when speed $>$25 m/sec), m/sec	$\pm 2\frac{1}{2}$
Wind direction, deg	$\pm 2\frac{1}{2}$

[1]Punched cards or magnetic tapes of the serially completed data can be obtained at nominal cost by writing to the Director, National Weather Records Center, Federal Building, Asheville, North Carolina 28801.

Above 16 km, a generally accepted value of accuracy is $\pm 5^{\circ}$ for wind direction and ± 10 percent for wind speed. At these high altitudes, the errors are related to the bias problem, that is, the possibility that high-wind-speed data were not obtained at high altitudes is more likely than the occurrence of large measurement errors.

The extent of the bias problem can be judged by examining the number of velocity measurements in the 9-year sample from each station before serial completion. Table I lists these sample sizes for observed velocity data at the Norfolk and Washington stations for each altitude level and calendar month. The total number of possible observations that would be included in a serially completed sample are listed in the last row of each of the tables. The values listed show a pattern of fewer observations at the higher altitude levels. For some months, such as February for the Washington station, about 80 percent of the possible observations were missing and had to be estimated by interpolation and extrapolation methods.

A detailed study of the effects of serial completion on the estimated parameter values for Wallops Island is planned, but only a few preliminary comparisons could be made at the time this paper was being prepared. The comparisons indicated that serial completion caused a significant increase in the estimated value of the mean wind at altitudes above 8 km during certain months. The largest increases in the estimated values of the zonal mean occurred in the 10- to 16-km region for winter and spring months. For example, the mean value of the zonal component for the 11-km level during the month of January was estimated to be 41 m/sec when based on the serially incomplete sample, but after serial completion the estimated value was 48 m/sec. A slightly smaller increase occurred in the estimated value of the standard deviation. Since the winds in the 10- to 16-km region are usually critical in determining the maximum vehicle response, the effort and cost of serial completion of data from Norfolk and Washington appears to be justified for seasons of high upper-air winds.

Although serial completion unquestionably reduces the bias in the estimates of means and standard deviations, its effects on other statistical parameters must be closely examined. As explained in appendix B, the serial completion procedure is based on an analyst's estimate of the spatial and time correlation of the wind. Consequently, estimates of the spatial and time correlation coefficients computed from serially completed data are biased by the interpolation and extrapolation schemes used by the analyst. However, it is believed that the bias introduced into the estimated correlation coefficients by using serially completed data is small and can be neglected for engineering applications. Programs for computing correlation coefficients can be greatly simplified when serially completed data (which have an equal number of observations at all levels) are used as input. Therefore, all the estimated parameter values listed in this report were based on serially completed data.

Another real improvement in estimated values of the statistical parameters over those presented in reference 1 was achieved by including more recent data in the sample and excluding data from Norfolk and Washington stations recorded prior to 1956. In fact, nearly all the wind observations for higher altitude levels were missing in the data recorded prior to 1956. Improved tracking techniques and equipment have resulted in substantially fewer missing observations in the rawinsonde records for the newer data included in the sample (that is, calendar years 1959 to 1964). It is the increased number of actual wind observations which provide an adequate basis for estimating time and spatial correlation coefficients.

Although serial completion removes the bias due to missing observations, the process in no way verifies the accuracy of the original data. Hasty computational and transcribing procedures at local weather stations are known to introduce errors into the original rawinsonde observations. For this reason, a checking procedure was developed by personnel at the National Weather Records Center that detects errors which produce physically improbable wind shears. This verification procedure is similar to that suggested in reference 7. The first step of the procedure involved examining the wind shear between various altitude levels in order to select unusual wind shear conditions for further investigation. This shear testing procedure was programed for a digital computer, and a computer run located many improbable wind shears. The data points associated with each improbable shear condition were checked by going back to original data sources. A significant number of errors were located in the 9-year sample from each station. The number of original observations which had to be corrected are given in table II for the Norfolk station and for the Washington station. The tables show that for certain calendar months and altitude levels as many as 13 percent of the original rawinsonde observations required corrections.

STATISTICAL ANALYSIS

In order to use the wind data from Washington and Norfolk to estimate the parameters of the wind-velocity distribution at Wallops Island, an interpolation scheme was required. Although it is common practice in meteorology to interpolate wind data between sampling stations, such procedures require close examination.

Weaver, et al. (ref. 1), examined a limited sample of data recorded for the actual Wallops Island location. These data were compared with data obtained at nearly the same time of day (early afternoon) at Washington and Norfolk. Approximately 100 comparisons were made with a randomly chosen set of samples covering a 1-year period. The wind vector at Wallops was found to lie about midway in value of magnitude and direction between the magnitude and direction of the winds at Norfolk and Washington. Accordingly, it was assumed that observations from each station should be weighted

equally. Further study of the validity of this interpolation is planned when a larger sample of data collected directly at Wallops Island becomes available.

The basic parameters defining the statistical distribution are thus given by the following relationships:

u	zonal wind component (west-to-east positive)[2]
$\bar{u}$	zonal mean wind
σ_u	zonal standard deviation
v	meridional wind component (south-to-north positive)[2]
$\bar{v}$	meridional mean wind
σ_v	meridional standard deviation
Σ	summation over sample size N
NOR	observations from Norfolk station
WAS	observations from Washington, D.C. station
WAL	observations representing Wallops Island

and

$$\Sigma u_{WAL} = \frac{\Sigma u_{NOR} + \Sigma u_{WAS}}{2}$$

$$\Sigma v_{WAL} = \frac{\Sigma v_{NOR} + \Sigma v_{WAS}}{2}$$

$$\Sigma(uv)_{WAL} = \frac{\Sigma(uv)_{NOR} + \Sigma(uv)_{WAS}}{2}$$

$$\Sigma(u^2)_{WAL} = \frac{\Sigma(u^2)_{NOR} + \Sigma(u^2)_{WAS}}{2}$$

$$\Sigma(v^2)_{WAL} = \frac{\Sigma(v^2)_{NOR} + \Sigma(v^2)_{WAS}}{2}$$

$$N_{WAL} = \frac{N_{NOR} + N_{WAS}}{2}$$

[2]The sign convention for zonal and meridional winds at Wallops Island used in this report is the same as that used in reference 3 and in the previously mentioned data of Daniels, Scoggins, and Smith, but is the opposite of that used in reference 1.

Because surface winds are greatly affected by the local terrain, the interpolation procedure is not expected to provide accurate estimates of winds at Wallops Island below the 3-km level.

In the following definitions, the subscript WAL is dropped, and u, v, and N are assumed to refer to u_{WAL}, v_{WAL}, and N_{WAL}, respectively

$$\bar{u} = \frac{\Sigma u}{N}$$

$$\bar{v} = \frac{\Sigma v}{N}$$

$$\sigma_u = \sqrt{\left[\Sigma(u)^2 - \frac{(\Sigma u)^2}{N}\right] \Big/ N - 1}$$

$$\sigma_v = \sqrt{\left[\Sigma(v)^2 - \frac{(\Sigma v)^2}{N}\right] \Big/ N - 1}$$

The interlevel correlation coefficient between zonal wind at altitude i and zonal wind at altitude j is given by

$$r\left(u_i, u_j\right) = \frac{\Sigma u_i u_j - \left(\Sigma u_i\right)\left(\Sigma u_j\right)}{\sqrt{N\Sigma\left(u_i\right)^2 - \left(\Sigma u_i\right)^2}\sqrt{N\Sigma\left(u_j\right)^2 - \left(\Sigma u_j\right)^2}}$$

The interlevel correlation coefficient between meridional wind at altitude i and meridional wind at altitude j is given by

$$r\left(v_i, v_j\right) = \frac{\Sigma v_i v_j - \left(\Sigma v_i\right)\left(\Sigma v_j\right)}{\sqrt{N\Sigma\left(v_i\right)^2 - \left(\Sigma v_i\right)^2}\sqrt{N\Sigma\left(v_j\right)^2 - \left(\Sigma v_j\right)^2}}$$

The crosslevel correlation coefficient between zonal wind at altitude i and meridional wind at altitude j is given by

$$r\left(u_i, v_j\right) = \frac{\Sigma u_i v_j - \left(\Sigma u_i\right)\left(\Sigma v_j\right)}{\sqrt{N\Sigma\left(u_i\right)^2 - \left(\Sigma u_i\right)^2}\sqrt{N\Sigma\left(v_j\right)^2 - \left(\Sigma v_j\right)^2}}$$

(The intralevel correlation coefficient is a special case of cross-component correlation coefficient when $i = j$.)

The time-lag correlation coefficient between wind vector at time t and wind vector at time $t + \tau$ is given by

$$r_{t,t+\tau} = \frac{\Sigma u_t u_{t+\tau} - \frac{\Sigma u_t \Sigma u_{t+\tau}}{N} + \Sigma v_t v_{t+\tau} - \frac{\Sigma v_t \Sigma v_{t+\tau}}{N}}{\sqrt{\Sigma\left(u_t\right)^2 - \frac{\left(\Sigma u_t\right)^2}{N} + \Sigma\left(v_t\right)^2 - \frac{\left(\Sigma v_t\right)^2}{N}}\sqrt{\Sigma\left(u_{t+\tau}\right)^2 - \frac{\left(\Sigma u_{t+\tau}\right)^2}{N} + \Sigma\left(v_{t+\tau}\right)^2 - \frac{\left(\Sigma v_{t+\tau}\right)^2}{N}}}$$

All the statistical computations indicated were performed on a digital computer. To avoid transcription errors, most of the tabulated data in this report are reproduced photographically from the original computer printouts.

PRESENTATION AND DISCUSSION OF STATISTICAL INFORMATION

Mean Wind Speed (Table III)

By resolving a measured wind vector into zonal (west-to-east) and meridional (south-to-north) components, the relative magnitude of each component can be judged. Table III contains estimates of the zonal mean wind speed and the meridional mean wind speed for 1-kilometer altitude intervals from 0 to 27 kilometers. Speeds are expressed in meters per second. The averages are for monthly and annual periods. The tabulated values of the zonal means in table III are much larger than the tabulated values of the meridional means and thus indicate the predominance of strong winds from the west. The seasonal variations of the zonal and meridional means are discussed in appendix C.

For purposes of computing confidence limits, the number of independent observations used to estimate each statistic must be known. The individual observations were not all independent because of two factors. First, observations were made at the same times at Norfolk and Washington stations and are not statistically independent. Therefore, the effective sample sizes for monthly and annual periods should be the number of observations recorded for a single station (for example, 1116 for a 31-day month and 13 140 for an annual period). The second factor affecting the number of independent observations in the sample is that observations made at 6-hour intervals may be significantly correlated for time lags of up to 72 hours. A procedure for determining the number of independent observations when values of the time-lag correlation coefficients are known is suggested by Bartlett (refs. 8 and 9). Reference 9 gives explicitly only the formula for two variables, as in the case for the interlevel correlation coefficients (eq. (4)). For a single variable this equation reduces to

$$N_I = \frac{N}{1 + 2r_1^2 + 2r_2^2 + 2r_3^2 + . . . + 2r_i^2} \quad (i = 1,2,3, . . .,12) \qquad (1)$$

where

N_I number of independent observations

N number of observations recorded at one station

r_i time-lag correlation coefficient for $i \times 6$ hour lag (values are given in tables VII) at altitude levels of interest

Equation (1) can be evaluated for each calendar month and altitude level. For example, the number of independent observations at the 11-km level during the month of January is computed as follows:

$$N_I = \frac{1116}{1 + 2(0.857)^2 + 2(0.689)^2 + . . . + 2(0.123)^2} \approx 216$$

Confidence intervals can be placed on the values of the mean by using the well-known procedure for estimating large-sample confidence intervals (where the true values of the standard deviation are unknown). In this case, the probability is $1 - \alpha'$ that the true value of the mean falls between the following limits:

$$\overline{X} - (Z\alpha'/2)\frac{s}{\sqrt{N_I}} < \mu < \overline{X} + (Z\alpha'/2)\frac{s}{\sqrt{N_I}} \qquad (2)$$

where

μ population mean

$\overline{X}$ value of mean estimated from sample

Z random variable in standard normal distribution $\overline{X} - \mu/\sigma$

$Z\alpha'/2$ value of Z such that integral of standard normal density function from $Z\alpha'/2$ to ∞ equals $\alpha'/2$

s sample standard deviation (see tables II)

N_I number of independent samples

Equation (2) can be used to place confidence limits on any values in table III. For example, if $\alpha' = 0.05$, then the probability is 0.95 that the true value of the zonal mean at the 11-km level during the month of January falls within the following limits:

$$45.618 - 1.960 \frac{19.399}{\sqrt{216}} < \mu < 45.618 + 1.960 \frac{19.399}{\sqrt{216}}$$

$$43.0 < \mu < 48.2$$

In other words, the probability is 0.95 (or 95 percent) that the true value of the zonal mean wind falls between 43.0 m/sec and 48.2 m/sec at the 11-km level during January.

Standard Deviation of Components of Wind Velocity (Table IV)

The standard deviation is a fundamental statistical parameter describing the variability of the data about the mean. Table IV presents estimates of the standard deviations of the zonal and meridional components of wind velocity for 1-kilometer altitude intervals from the surface to 27 kilometers. Values (in m/sec) are presented for monthly and annual time periods. The information in table IV indicates that the estimated values of the standard deviations of the zonal component are approximately equal to the values of the meridional component at altitude levels below 20 km. The seasonal variations of the parameters are discussed in appendix C.

The values for the number of independent samples suggested in the "Mean Wind Speed (Table III)" also apply to the number of independent samples used to estimate the standard deviation (for example, for the 11-km altitude level during January, $N_I = 223$). Because of the large sample size, the distribution of the sample standard deviation s can be approximated by a normal distribution having mean μ and variance $\sigma^2/2N_I$ (ref. 10). This distribution assumption leads to the following $1 - \alpha'$ confidence interval for σ:

$$\frac{s}{1 + \left(Z\alpha'/2/\sqrt{2N_I}\right)} < \sigma < \frac{s}{1 - \left(Z\alpha'/2/\sqrt{2N_I}\right)} \tag{3}$$

By using equation (3), approximate confidence limits can be placed on any of the values in table IV. For example, if $\alpha' = 0.05$, then the probability is 0.95 that the true value of the standard deviation of the zonal component at the 11-km level during the month of January falls within the following limits:

$$\frac{19.399}{1 + \left(1.960/\sqrt{432}\right)} < \sigma < \frac{19.399}{1 - \left(1.960/\sqrt{432}\right)}$$

or

$$17.7 < \sigma < 21.4$$

In other words, the probability is 0.95 that the true value of the standard deviation lies between 17.7 m/sec and 21.4 m/sec.

Interlevel Correlation Coefficients (Tables V and VI)

Interlevel correlation coefficients express the degree of linear relationship between the same wind components at two altitude levels. A correlation coefficient of 0 implies that the winds at the two levels are uncorrelated, and values of 1 or -1 indicate a perfect linear correlation. Tables V and VI present estimates of the interlevel correlation coefficients. Table V presents the interlevel correlation coefficients for the zonal component. Each matrix (or subtable) presents estimates for a particular calendar month or for an annual period. Although each matrix is symmetric about the diagonal of unit elements, the complete form of each matrix has been printed out to facilitate the location of particular elements in the matrix.

A nonzero value of the correlation coefficient in tables V and VI does not necessarily mean that the wind-velocity components at the two altitude levels are correlated. In fact, the computed correlation coefficient between two series of random numbers is seldom exactly zero and, sometimes, is very large. In order to decide whether a particular estimate of an interlevel correlation coefficient is significant in the statistical sense, the concept of confidence limits must be employed. Charles (ref. 11) and Brooks and Carruthers (ref. 12) discuss the significance of interlevel correlations.

Bartlett's equation, which approximates the effective degrees of freedom in testing correlation between series, can be used to estimate the number of independent samples to be used in testing the significance of interlevel correlation coefficients. The relationship (as given in ref. 9) is as follows:

$$N_{jk} = \frac{N}{1 + 2r_1r_1' + 2r_2r_2' + \ldots + 2r_ir_i'} \qquad (i = 1,2,3,\ldots,12) \qquad (4)$$

where

N_{jk} number of independent observations used to compute interlevel correlation coefficient between altitude level j and altitude level k

N number of observations in sample

r_i time-lag correlation coefficient for $i \times 6$ hour lag at altitude level j

r_i' time-lag correlation coefficient for $i \times 6$ hour lag at altitude level k

Because the interpolated or extrapolated data bias the estimated correlation coefficients, a conservative estimate of N can be obtained by using tables I(a) and I(b). The first step is to compare the number of observations at level j to the number of observations at level k as given in table I(a). The smaller number is then compared with the numbers for altitude levels j and k as given in table I(b), and the smallest value is selected to be the value of N to be used in equation (4). For example, to determine the N-value for altitude level $j = 11$ and $k = 17$ for the month of January, the values of 876 and 673 are located in the first column of table I(a) and values of 786 and 603 are located in the first column of table I(b). Since the value of 603 is the smallest of the 4 values, this value should be used for N in equation (4).

To illustrate the use of equation (4), sample computations are performed to establish the number of independent observations used in computing the interlevel correlation coefficient between zonal components at the 11-km and 17-km levels for the month of January. From this discussion, $N = 603$, and substituting values of r_i and r_i' (from table VIII), equation (4) becomes

$$N_{11,17} = \frac{603}{1 + 2(0.857)(0.808) + 2(0.689)(0.659) + \ldots + 2(0.123)(0.176)} \approx 112$$

When the true or population value of the correlation coefficient is large, the value of the correlation coefficient computed from the sample does not have a normal distribution (ref. 11). To overcome this difficulty, Fisher's Z' transformation for any correlation r is given by:

$$Z' = \frac{1}{2}(\log_e(1 + r) - \log_e(1 - r)) = \frac{1}{2} \log_e\left(\frac{1 + r}{1 - r}\right) = \text{arc tanh } r \tag{5}$$

The statistic Z' has nearly a normal distribution with standard deviation $1/\sqrt{(N_{jk} - 3)}$. Confidence limits can be placed on the Z' values; subsequently, the limits can be transformed back to give confidence limits on r. The transformation can be facilitated by using a conversion table (as provided in ref. 12) or tables of hyperbolic tangents in standard mathematical tables. For example, the estimated value of $r(u_{11},u_{17})$ during January (see table V) is 0.604 which yields a Z' of 0.700 and standard deviation of Z' of 0.096. The 0.95 (or 95 percent) confidence limits on Z' are therefore:

$$0.700 \pm 0.096(1.96)$$

or

$$0.511 < Z'(\text{true}) < 0.889$$

Hence, if Z' is converted back to $r(u_{11},u_{17})$, the following confidence limits are obtained:

$$0.471 < r(u_{11},u_{17}) < 0.711$$

When similar calculations for January are performed for $r(u_{11},u_{23}) = 0.115$ (from table V), the smallest value of N becomes 477, and the value of $N_{11,23} = 85$ (from eq. (4)). By using equation (5), it is found that $-0.099 < r(u_{11},u_{23}) < 0.317$. At this risk level, 0.115 is not significantly different from 0 and does not indicate a positive correlation between zonal winds at the 11-km and 23-km levels during January.

The significance of any of the estimated correlation coefficients in tables V and VI can be computed in a similar manner.

Crosslevel and Intralevel Correlation Coefficients (Table VII)

The crosslevel and intralevel correlation coefficients are fundamental statistical parameters which measure the linear relationship between wind-speed components. Table VII presents estimates of meridional wind components for all combinations of altitude levels for monthly and annual periods. Each subtable is a matrix in which the diagonal elements are estimates of the intralevel correlation coefficients and the off-diagonal elements are crosslevel correlations. The crosslevel correlation between the zonal wind component at altitude level i and the meridional component at an altitude j is found at the intersection of the ith row and the jth column of the matrix. Consequently, the matrix is not symmetric.

The significance of the estimated values of the crosslevel correlation coefficients can be tested by using the method suggested in the discussion of table V. The number of independent observations to be used in computing the significance of the intralevel correlations is also obtained by using equation (4) (in which case r_i and r_i' would be equal) and by selecting the smallest value of N for the single altitude level from table I(a) and table I(b). For example, a conservative estimate of the number of independent observations to be used to compute the intralevel coefficients between the zonal and meridional components at the 11-km level for January (by using eq. (4) with $N = 786$ (from table I(b)) is about 152. By using equation (5) and tables of the Z' transformation, the following 0.95 (or 95 percent) confidence limits can be placed on the intralevel correlation $r(u_{11},v_{11})$ for January:

$$-0.020 < r(u_{11},v_{11}) < 0.297$$

Therefore, the estimated value of the intralevel correlation (0.141) for January is not significantly different from 0.

The number of independent observations used in computing the crosslevel correlation between the zonal wind at 11 km and the meridional component at 17 km is 112 (using eq. (4) with $N = 603$). Again by using equation (5) and tables of the Z' transformation, the following 0.95 (or 95 percent) confidence limits can be placed on the crosslevel correlation coefficient $r(u_{11},v_{17})$ for January:

$$-0.077 < r(u_{11},v_{17}) < 0.301$$

Consequently, the estimated value of the crosslevel correlation coefficient (0.109) is not significantly different from zero. However, some estimated values in table VI are significantly different from zero, and confidence limits on individual elements in each matrix should be examined by using equations (4) and (5) before drawing inferences about the true linear correlation of the wind components.

Time-Lag Correlation Coefficients (Table VIII)

Several statistics have been used to measure the correlation between vectors. However, there is considerable debate about the relative merits of such statistics as a measure of the time correlation of the wind. (See refs. 13, 14, and 15.) The stretch-vector correlation (refs. 16, 17, and 18) has probably received the widest use as a measure of the time variability of the wind. Accordingly, all time-lag correlations tabulated in this report are stretch-vector correlations. Table VIII presents estimates of the time-lag correlation coefficient for a particular altitude level and for monthly and annual periods. The time-lag correlation coefficients were computed for 6-hour increments up to a total lag time of 72 hours, and the estimated values are listed under appropriate column headings in each subtable. The column labeled "alpha" in each subtable gives a value of α which was computed by fitting (by the least-squares method) a function of the type

$$f(\tau) = e^{-\alpha\tau} \tag{6}$$

to the estimates of the time-lag correlations listed in each row of the table. The last column in each table lists the root-mean-square (rms) error in fitting equation (6) to the data. The root-mean-square values are small for altitude levels above 3 km; thus, the fit of equation (6) to the data is good. Consequently, equation (6) should be used for computing values of $r_{t,t+\tau}$ for lag periods (for example, 5 hours) not explicitly listed in the subtables. It is interesting to note that, in general, the value of α decreases as the

altitude level increases as is shown by the plot of α in figure 1. It follows that the persistence of the wind increases with altitude level.

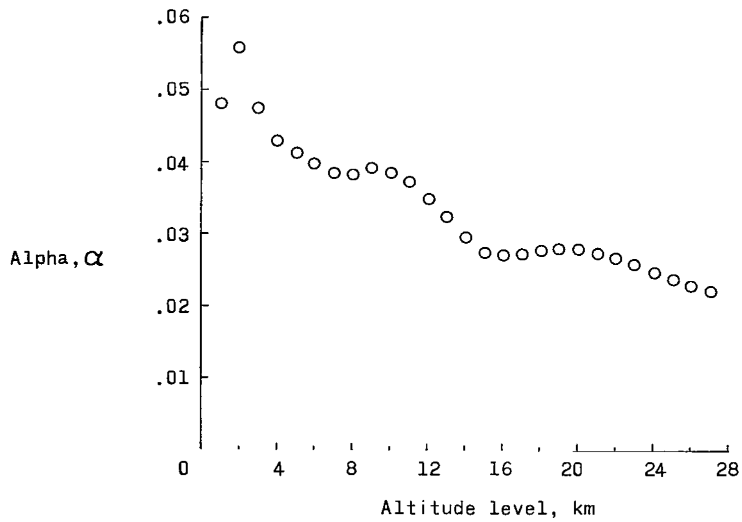


Figure 1.- Variation of annual values of curve fitting parameter "alpha" (α) with altitude level.

The significance of the estimates of the time-lag correlation coefficients can be tested by computing confidence intervals by using the method for intralevel correlation coefficients suggested in the discussion of table V (that is, by use of eqs. (4) and (5)). For example, calculations using equation (4) indicate that the number of independent observations at the 11-km level for the month of January is about 152. Confidence limits are then computed by using equation (5). For a 12-hour lag during January at the 11-km level, the 0.95 (or 95 percent) confidence limits on the true value of the time-lag correlation coefficient are as follows:

$$0.595 < r_{t,t+\tau} < 0.766$$

Consequently, the estimated value of $r_{t,t+\tau}$ (0.689) is significantly different from 0 at the 11-km level for January. However, if a 48-hour lag at the 11-km level during February is considered, the 0.95 (or 95 percent) confidence limits on the true value of the time-lag correlation becomes

$$-0.052 < r_{t,t+\tau} < 0.267$$

In this case, the estimated value of $r_{t,t+\tau}$ (0.111) is not significantly different from zero. This same procedure can be used to test the significance of the estimates of the time-lag correlation coefficients for other altitude levels and averaging periods.

Use of Tabulated Information

Since statistical methods are basic to the analysis of most meteorological data, a complete discussion of the possible uses of the statistical information provided in this report would not be feasible. References 12 and 19 provide excellent summaries of the uses of fundamental statistical parameters in a wide variety of meteorological applications. Some particular applications of statistical methods to problems concerning wind inputs to space vehicles deserve mention.

One use of the tabulated values of means, standard deviations, and intralevel correlation coefficients is to compute wind-speed and wind-direction probabilities for a selected altitude level by assuming that the wind velocity distribution at Wallops Island can be modeled by the vector (that is, bivariate) normal distribution. Weaver, et al., (ref. 1) carried out a detailed study of the velocity distribution at Wallops Island. Reference 1 included a comparison of wind-speed and wind-direction probabilities determined by three methods: the empirical cumulative frequency method and integration of the elliptical and circular forms of the vector normal distribution over appropriate regions. Reference 1 concluded that the elliptical distribution method gave the best results for determining wind-speed and wind-direction probabilities; however, it was also concluded that the circular distribution method is easier to use and gives good probability estimates for altitudes below about 20 km. Although the velocity distribution is very elliptical at altitudes above about 20 km, it was shown (by using parameter values estimated from serially incomplete data) that the integration of the circular form of the vector normal distribution over appropriate regions provided an adequate approximation of wind-speed and wind-direction probabilities. Because the values of fundamental statistical parameters estimated from serially completed data still contain measurement errors and statistical uncertainties, the circular form of the vector normal distribution can be used with the tabulated data in this report to obtain probability estimates which are sufficiently accurate for most engineering applications. Appendix A summarizes the procedures for computing wind-speed and wind-direction probabilities by use of the vector normal distribution.

Henry (ref. 20) uses the vector (that is, bivariate) normal distribution to construct a mathematical model for extreme-value wind-velocity profiles. These profiles can be constructed rapidly and objectively with the tabulated values of means, standard deviations, and intralevel and interlevel correlation coefficients included in this report. The profiles can be tailored to a specific calendar month, launch azimuth, and critical altitude (corresponding to maximum vehicle response).

Several other practical applications of the tabulated statistical data to aerospace problems have been suggested. Mulligan (ref. 21) describes the use of various altitude correlation coefficients on missile impact dispersion studies. Bieber (ref. 22) presents

a method of calculating structural load responses on vertically rising vehicles which requires knowledge of the matrix of interlevel correlation coefficients.

The use of calendar month averages of the statistical parameters of the wind velocity distribution to compute climatological probability estimates for individual calendar days or for several calendar days can sometimes introduce significant error at the beginning or end of a month, especially in the spring or fall. A study of the seasonal wind patterns at Wallops Island (ref. 4) indicates that simple linear interpolation of the calendar month averages provides sufficiently accurate estimates of daily parameter values for most engineering applications. The interpolation of values of the zonal mean wind at the 11-km level is illustrated graphically in figure 2. The accuracy of the interpolation procedure is discussed in detail in appendix C. Since the linear interpolation can be made by using the standard tabulations presented in this report, this method is recommended for obtaining the climatological estimates of a statistical parameter for a given calendar day.

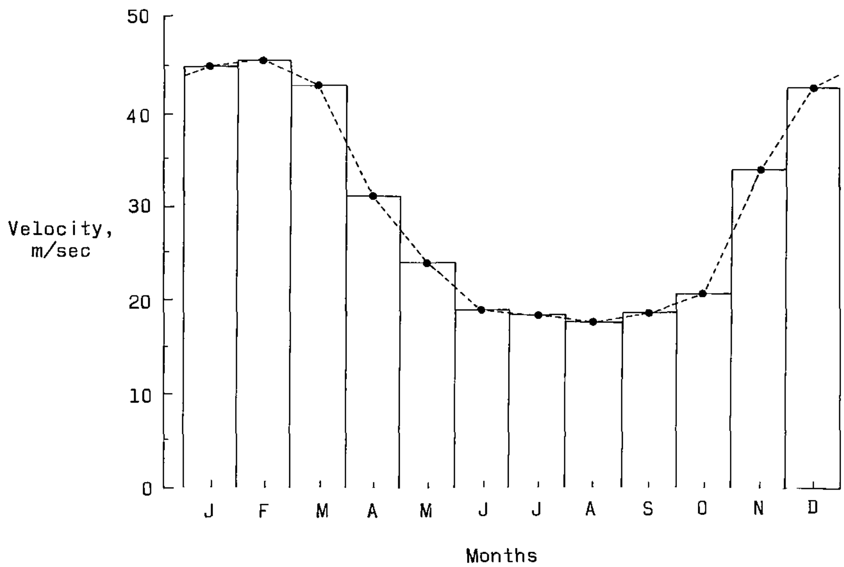


Figure 2.- Illustration of procedure for obtaining daily values of zonal mean wind at 11-km altitude level by linear interpolation of calendar month averages of zonal mean.

For planning and scheduling purposes, it is desirable to know the probability that wind conditions will permit launching well in advance of the scheduled launch time. For periods of time longer than about 3 days, a climatological "forecast" based on the data tabulated in this report will generally provide the best estimate. For shorter periods, a better forecast of the zonal wind u_t at time t can be obtained from an optimum linear combination of the latest observation u_0 at $t = 0$ and the climatic mean $\bar{u}$ for the calendar day of interest (as computed by linear interpolation of calendar month

averages) and can be written

$$\hat{u}_t = r_{t,t+\tau} u_o + \left(1 - r_{t,t+\tau}\right)\bar{u} \tag{7}$$

where $r_{t,t+\tau}$ is the time-lag correlation coefficient for the forecast period (as given in table VIII). The forecast standard error σ_u for this regression is given by

$$\sigma_{\hat{u}} = \sigma_u \sqrt{1 - \left(r_{t,t+\tau}\right)^2} \tag{8}$$

where σ_u is the estimate of the zonal standard deviation for the calendar day of interest (as computed by linear interpolation of the monthly averages of the zonal standard deviation). From intuitive considerations, it is clear that if the value of $r_{t,t+\tau}$ is near unity, the observed value of the wind is weighed more heavily than the climatic mean in computing the forecast. Equations similar to equations (7) and (8) can be derived for forecasting other fundamental statistical parameters. A complete discussion of statistical forecasting of winds aloft using time-lag correlation coefficients is presented in reference 23.

CONCLUDING REMARKS

Serial completion and checking procedures were used to develop an improved sample of rawinsonde data for Wallops Island, Virginia. Estimates of fundamental wind statistics for upper-air winds computed from the improved sample are significantly more accurate than previously published estimates. Because the sample for Wallops Island was based on interpolated rawinsonde data from stations at Washington, D.C., and Norfolk, Virginia, the estimated statistical parameters of the wind velocity distribution are not expected to reflect the surface wind environment accurately at Wallops Island below the 3-kilometer level. However, the tabulated wind statistics for altitudes above 3 kilometers are appropriate as reference data for upper-air winds in establishing design and launch criteria as well as in supporting range operations at Wallops Island. The elliptical form of the vector (that is, bivariate) normal distribution can be used for calculating (by using the tabulated data) wind-speed and wind-direction probabilities for Wallops Island. However, the circular form of the vector normal distribution is easier to apply and provides adequate estimates of wind-speed and wind-direction probabilities for most applications. For applications where accurate wind-speed or wind-direction probabilities are needed for individual calendar days or other time periods less than a

calendar month, daily parameter values should be computed by linear interpolation of calendar month averages.

Langley Research Center,

National Aeronautics and Space Administration,

Langley Station, Hampton, Va., September 15, 1967,

124-08-04-27-23.

APPENDIX A

THE VECTOR NORMAL DISTRIBUTION

Weaver, et al., (ref. 1) investigated several methods of computing wind-speed and wind-direction probabilities for Wallops Island and found that a model distribution (the vector normal distribution) provided more accurate probability estimates than empirical cumulative frequency methods.

By assuming the vector (that is, bivariate) normal distribution as a model of the wind-velocity distribution, the probability that a wind vector, terminating at the origin of the coordinate axes, will originate in a region S of the u,v-plane can be written as follows:

$$P(u,v) = \frac{1}{2\pi\sigma_u\sigma_v\sqrt{1 - r_{uv}^2}} \iint_S e^{-G/2} du\, dv \tag{A1}$$

where

$$G = \frac{1}{1 - r_{uv}^2}\left[\left(\frac{u - \bar{u}}{\sigma_u}\right)^2 - \frac{2r_{uv}(u - \bar{u})(v - \bar{v})}{\sigma_u\sigma_v} + \left(\frac{v - \bar{v}}{\sigma_v}\right)^2\right]$$

u	zonal wind component
v	meridional wind component
σ_u	zonal standard deviation
σ_v	meridional standard deviation
r_{uv}	intralevel correlation coefficient between u- and v-component

Although the estimated parameter values for Wallops Island indicate that the vector wind velocity distribution is elliptical rather than circular (that is, $\sigma_u \neq \sigma_v$ and $r_{uv} \neq 0$), the circular form of the distribution (that is, $\sigma_u = \sigma_v$ and $r_{uv} = 0$) is easier to integrate than the elliptical form. A method of treating the more general elliptical case is given in reference 19. The simpler circular form of the vector normal distribution provides estimates of wind-speed and wind-direction probabilities for Wallops Island which are adequate for most purposes. (See ref. 1.)

APPENDIX A

Wind-speed and wind-direction probabilities are found by integration of equation (A1) over appropriate regions. The integration is simpler if the following substitutions are made:

$$u = V \sin \theta$$

$$v = V \cos \theta$$

$$R = V/\sigma_u$$

$$c = \sigma_v/\sigma_u$$

$$\overline{u} = \overline{V} \sin \overline{\theta}$$

$$\overline{v} = \overline{V} \cos \overline{\theta}$$

$$\overline{R} = \overline{V}/\sigma_u$$

A geometric description of several of these parameters is given in figure 3. Then equation (A1) becomes

$$P\left(R_1 \leqq R \leqq R_2, \theta_1 \leqq \theta \leqq \theta_2\right) = A\int_{\theta_1}^{\theta_2}\int_{R_1}^{R_2} e^{-\frac{B}{2\left(1-r_{uv}^2\right)}} R\, dR\, d\theta \tag{A2}$$

where

$$A = \frac{1}{2\pi c}\frac{1}{\sqrt{1 - r_{uv}^2}} \tag{A3}$$

and

$$\begin{aligned} B = {} & R^2\left(\sin^2\theta + \frac{\cos^2\theta}{c^2}\right) + \overline{R}^2\left(\sin^2\overline{\theta} + \frac{\cos^2\overline{\theta}}{c^2}\right) - 2R\overline{R}\left(\sin\theta \sin\overline{\theta} + \frac{\cos\theta\cos\overline{\theta}}{c^2}\right) \\ & - \frac{2r_{uv}}{c}\left[R^2\sin\theta\cos\theta + \overline{R}^2\sin\overline{\theta}\cos\overline{\theta} - R\overline{R}\sin(\theta + \overline{\theta})\right] \end{aligned} \tag{A4}$$

For the special case of the circular distribution, equation (A2) reduces to

$$P\left(R_1 \leqq R \leqq R_2, \phi_1 \leqq \phi \leqq \phi_2\right) = \frac{1}{2\pi}\int_{\phi_1}^{\phi_2}\int_{R_1}^{R_2} e^{-\frac{1}{2}\left(R^2+\overline{R}^2-2R\overline{R}\cos\phi\right)} R\, dR\, d\phi \tag{A5}$$

where $\sigma_u = \sigma_v = \sigma$ and $\phi = \theta - \overline{\theta}$.

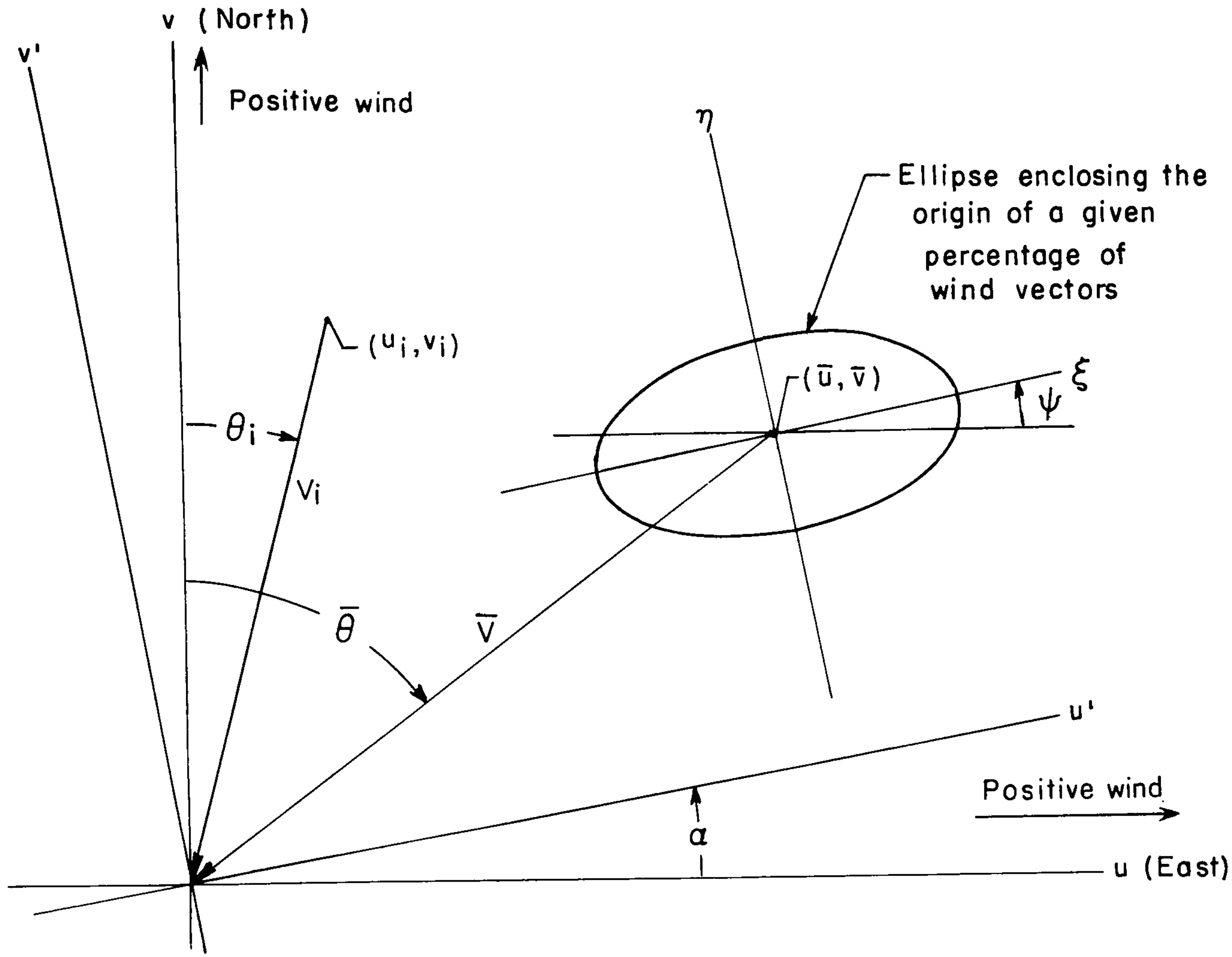


Figure 3.- Geometric description of wind distribution parameters.

APPENDIX A

If equation (A2) is integrated over a region described by a circle around the origin of the u,v coordinate axes (with the origin of the distribution at $(\bar{u},\bar{v})$ as illustrated in figure 4), then the resulting probability will be that of a wind vector originating on or within this circle and terminating at $u = v = 0$ (including winds from all directions). The integration limits of equation (A2) are then $\theta_1 = 0$ and $\theta_2 = 2\pi$ and $R_1 = 0$ and $R_2 = R_2$. Since the probability is a function of the variable R_2, this integral is solved by substituting the desired value of probability into the left-hand side of equation (A2) and a value of R_2 which satisfies equation (A2) is found by iteration. For equation (A5) a similar procedure is followed with $\phi_1 = 0$ and $\phi_2 = 2\pi$ and $R_1 = 0$ and $R_2 = R_2$. For the elliptical distribution (eq. (A2)), the probability is a function of V/σ_u, $\bar{V}/\sigma_u$, and $\bar{\theta}$, c,r_{uv} and, therefore, it is not practical to generate a table or set of curves giving general solutions. However, for the circular distribution (eq. (A5)), a simple table can be constructed for P as a function of $\bar{V}/\sigma$ and R/σ; a plot of such a table is presented in figure 5.

Estimates of $\bar{V}$, σ, and $\bar{\theta}$ can be obtained by substituting the tabulated values of $\bar{u}$, $\bar{v}$, σ_u, and σ_v provided in tables III and IV of this report in the following formulas:

$$\bar{V} = \sqrt{\bar{u}^2 + \bar{v}^2} \tag{A6}$$

$$\sigma = \sqrt{\frac{\sigma_u{}^2 + \sigma_v{}^2}{2}} \tag{A7}$$

$$\theta = \tan^{-1}\left(\frac{\bar{u}}{\bar{v}}\right) \tag{A8}$$

The estimated values of $\bar{V}$, σ, and θ can be used with figure 3 to define either the probability of occurrence of a wind magnitude V or the magnitude of wind V which will correspond to a particular probability.

In order to find the probability that a wind (including all wind speeds) will blow from a region bounded by $\theta = 0$ and $\theta = \theta_2$ (or $\phi = 0$ and $\phi = \phi_2$), the limits of integration of equation (A2) are changed to $\theta_1 = 0$ and $\theta_2 = \theta_2$ and $R_1 = 0$ and $R_2 \to \infty$ and of equation (A5) to $\phi_1 = 0$ and $\phi_2 = \phi_2$ and $R_1 = 0$ and $R_2 \to \infty$. These limits for the probability of direction are also geometrically interpreted in figure 4. In performing the numerical integration, the upper limit of R should be limited to a finite but high value. The elliptical binormal distribution again requires an extensive general table, and a particular solution for a given set of variables is all that is generally practical. The circular distribution once more reduces to a sufficiently small set of variables with P depending on ϕ and $\bar{V}/\sigma$, and a general solution can be given as is presented in figure 6. The probability of a wind blowing from a region bounded by radius

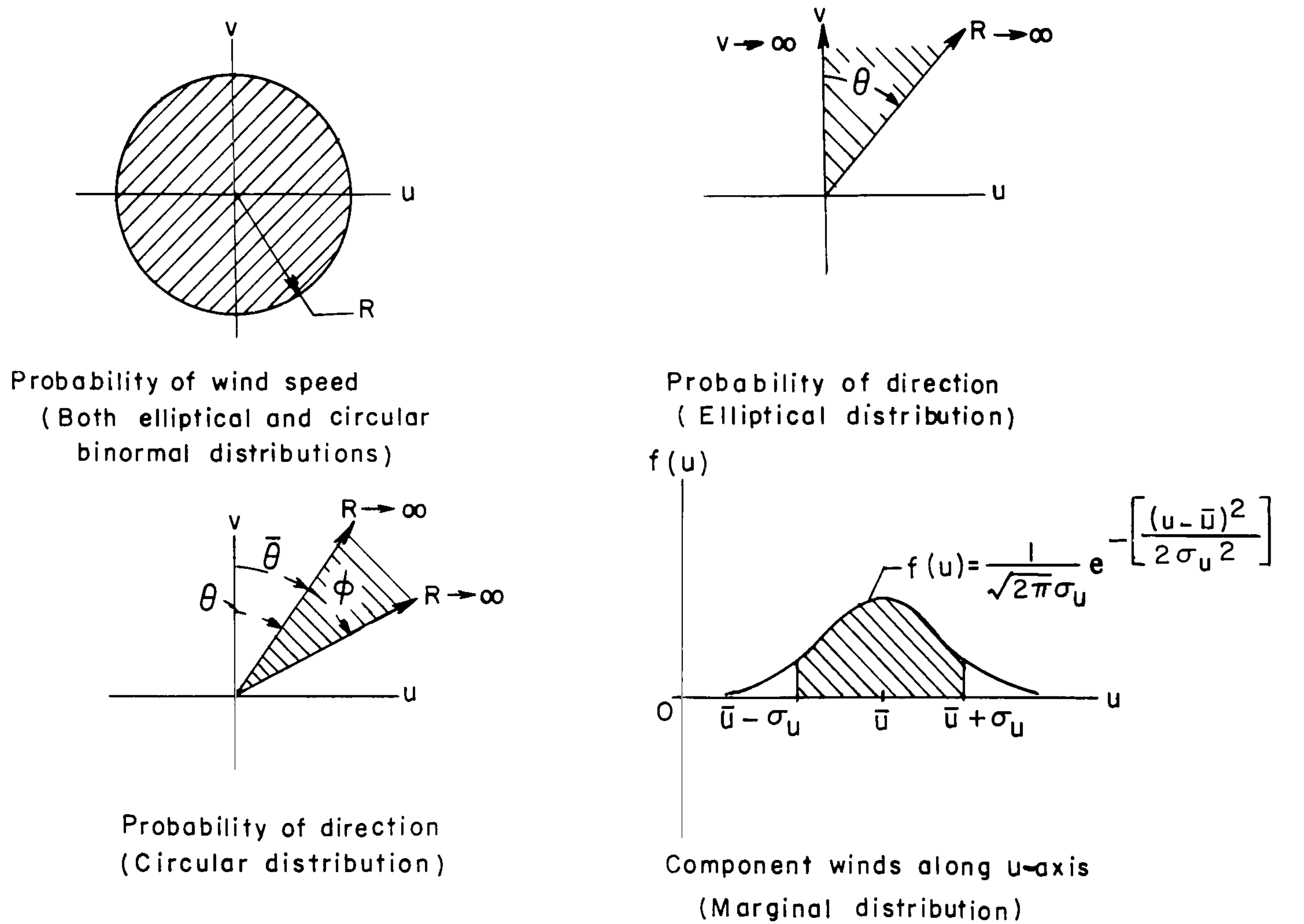


Figure 4.- Areas of integration of probability distributions.

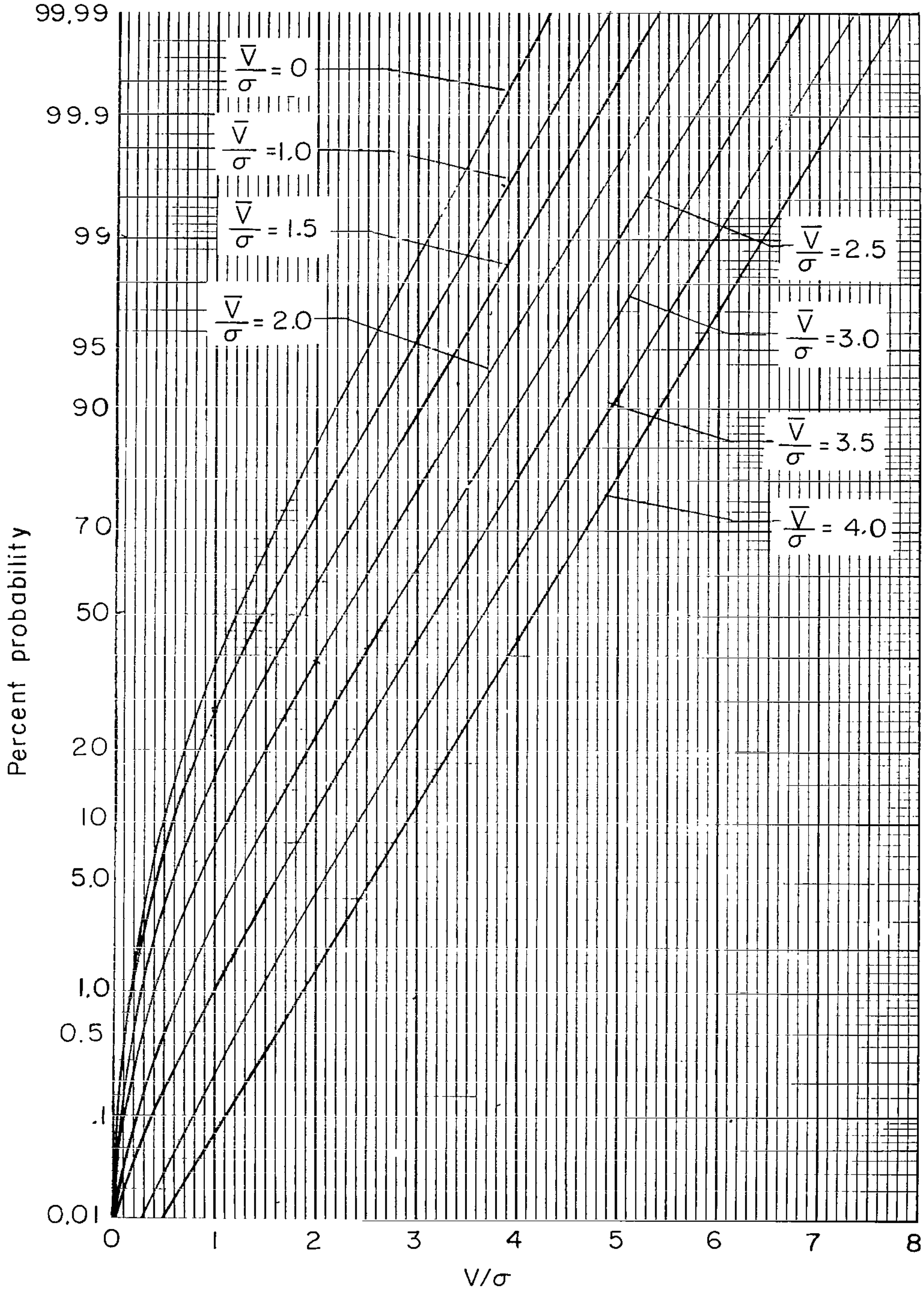


Figure 5.- Wind-speed probability curves for circular form of vector (bivariate) normal distribution.

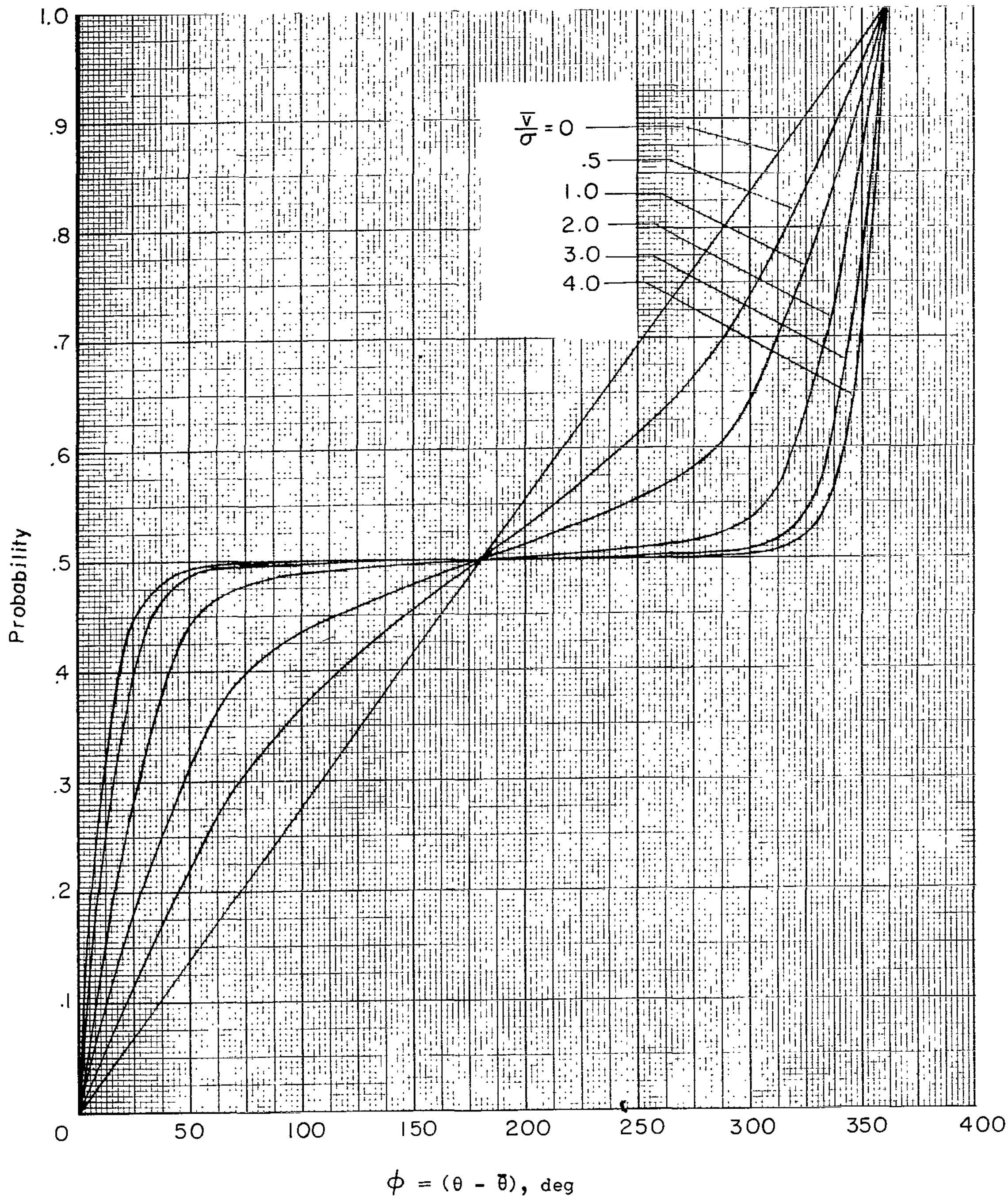


Figure 6.- Wind-direction probability curves for circular form of vector (bivariate) normal distribution.

vectors having angles of θ_1 and θ_2 (or ϕ_1 and ϕ_2) is

$$P(\theta_2) - P(\theta_1) \qquad (\theta_2 > \theta_1)$$

and

$$1 + \left[P(\theta_2) - P(\theta_1)\right] \qquad (\theta_1 > \theta_2)$$

Obviously, the probability of a wind of a given magnitude coming from a specified range of direction can also be found by using equations (A2) and (A5). However, this probability value is generally not as useful as the probabilities associated with down-range and cross-range components. The procedure for obtaining the marginal distribution of the wind vector along any axis is discussed in detail in reference 1.

APPENDIX B

DISCUSSION OF PROCESS OF SERIAL COMPLETION

Limitations of the Rawinsonde System

Ground-tracked balloon-borne radio transmitters (rawinsondes) have been used routinely for years to collect data about upper-air winds. Consequently, rawinsonde data exist in sufficient number to permit statistical analysis. Although certain statistical deficiencies are present in the samples of rawinsonde data, these deficiences are often ignored for reasons of expediency (that is, a major effort would be required to correct these deficiences). However, the design and operation of complex missile and space systems has created an urgent need for better statistical descriptions of upper-air winds and has focused attention on methods of circumventing the limitations of rawinsonde samples.

A rawinsonde balloon rises at nearly a constant rate, and velocity information can be derived by timing azimuth and elevation angles of the balloon. The most significant limitation of rawinsonde data is low-elevation-angle termination which occurs when the target balloon merges with the horizon and can no longer be tracked by the electronic equipment on the ground. Because the low-elevation-angle termination is associated with high winds and high altitude levels, the missing observations introduce a systematic bias into the data.

Methods of Serial Completion

To overcome the bias from low-elevation-angle termination, a serial completion process has been developed. The methods of serial completion include every conceivable justifiable means of inferring missing data. The U.S. Navy (ref. 24) made the first major effort to fill in systematically the missing upper-air wind data. In the wind sample for reference 24, geostrophic scaling (with corrections for radius of curvature) of daily isopleth maps of constant-pressure surfaces was used to infer the missing observations. A similar method was used to complete serially the wind samples used for references 25, 26, and 27. Suitable constant-pressure charts are not usually available for single stations, and techniques other than map scaling have been used to complete serially such cases. One successful technique is a graphical time section analysis (abscissa, time; and ordinate, height). This technique was used to complete serially the data for reference 28. To complete serially the Norfolk and Washington sample used for this report, a computer program was developed to plot the time section of the data, but the actual analysis was still carried out by a trained meteorologist. Because a meteorologist necessarily uses some subjective judgment in his analysis, his role would be difficult to

automate. For this reason, serial completion projects require many man-years effort from trained analysts and are expensive (about $4000 per station-year for the Norfolk and Washington data).

Recording of Serially Completed Data

A punched card deck has been developed at the National Weather Records Center for serially completed upper-air wind observations. Called card deck 600, the cards are punched with wind direction (degrees) and wind velocity (m/sec). Three 80-column cards represent a complete sounding and include observations at 1-km intervals from the surface to 27 km. A coded identifier is punched into each card showing data characteristics for each level of each observation. The code indicates how each accompanying observation was generated (that is, observed, corrected, interpolated, or extracted). Copies of card deck 600 (or magnetic tape records) for the Norfolk or Washington stations can be obtained from NWRC at nominal cost.

Effectiveness of Serial Completion Process in Reducing Bias

Several studies have been undertaken to determine the extent to which the bias due to missing observations was reduced by serial completion. Charles (ref. 27) discusses the effect of serial completion on the estimated values of the mean and standard deviation during the summer and winter for a number of different geographical locations (but none for the vicinity of Wallops Island). Charles compared summer and winter vertical profiles of the zonal mean wind components and their standard deviations based on serially complete and serially incomplete data. Differences in the summer season were found to be insignificant. However, during the winter the difference in the zonal mean wind component at a number of stations exceeded 5 m/sec through large thicknesses of atmosphere. Differences in excess of $2\frac{1}{2}$ m/sec through similar thicknesses occurred in the zonal standard deviation. A preliminary study of the effects of serial completion resulted in significant differences in the values of the mean wind components during the months of extreme wind speed. However, reference 28 also concluded that serial completion may not be necessary for regions and seasons of moderate winds aloft. Some preliminary results from a comparison between serially complete data and serially incomplete data from the Norfolk and Washington stations are discussed in the section of this report entitled "Accuracy of Data."

APPENDIX C

INTERPOLATION PROCEDURES FOR ADJUSTING PARAMETER ESTIMATES TO TAKE ACCOUNT OF SEASONAL VARIATION AND SHORT-TIME VARIATIONS

Importance of Seasonal Variations

For vehicle design criteria, a single wind condition based on either the entire year or the worst season of the year is usually sufficient. For launch operations, however, a more complete knowledge of wind conditions is needed, including an understanding of variations of climatological wind patterns over the year. The importance of climatological variations even over periods of only a few days was pointed out dramatically by the Scout vehicle wind loads experiment at Wallops Island (ref. 4). The problem for this launch was somewhat unusual in that there was a requirement for high wind speeds rather than low winds, but this problem is not fundamentally different from the usual case. Range requirements and experiments onboard the vehicle established an available launch period covering late October and early November. The probability of occurrence of the desired 60 m/sec wind velocity was computed by using standard data tabulated by calendar months. These computations led to the startling conclusion that the climatological probability of occurrences of this wind velocity suddenly jumped from less than 1 percent on October 31 to about 8 percent on November 1. Obviously, calendar month averages are not adequate for this type of computation, and patterns of variation over shorter periods are needed.

In this appendix seasonal patterns of statistical wind parameters based on daily averages and smoothed daily averages are presented, and some methods of representing these patterns based both on daily averages and on the usually available calendar month averages are indicated.

Daily Averages of Wind Parameter Values

The values of the mean and standard deviations for the zonal and meridional wind components were computed for every day of the year and at 1-km intervals over the altitude range of 0 to 27 km. Plots of the variation of daily values of these Wallops wind parameters with day of the year are presented in figures 7 and 8 for the altitude of 11 km. A seasonal trend is clearly present in the zonal mean data, but there is considerable scatter in the daily values. In the plots of meridional means and both zonal and meridional standard deviations, the daily scatter is large in comparison with any seasonal fluctuations and obscures the shape of any seasonal trend. The same type of scatter was found for the 27 altitude levels examined for this study.

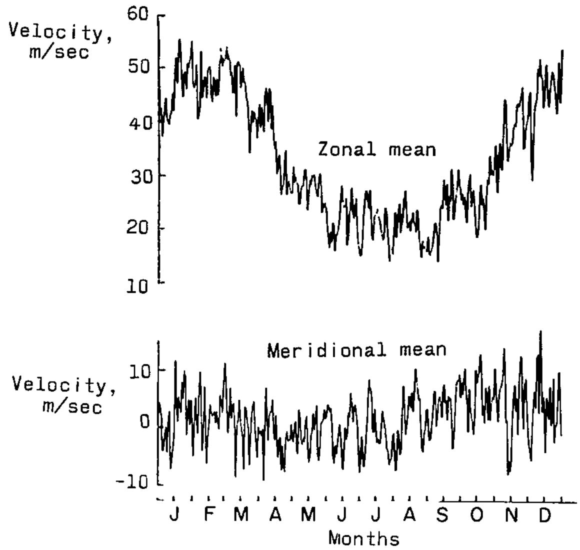


Figure 7.- Plots of daily values of means of zonal and meridional components of wind velocity for altitude level of 11 km (as estimated from individual-calendar-day samples).

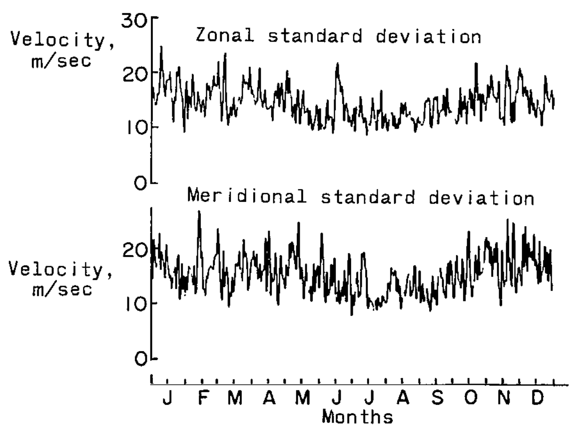


Figure 8.- Plots of daily values of standard deviations of zonal and meridional components of wind velocity for altitude level of 11 km (as estimated from individual-calendar-day samples).

APPENDIX C

Smoothed Values of Statistical Parameters

Because of the large amount of scatter in the 1-day averages, running means were computed for 1-, 3-, 5-, . . . 29-, and 31-day averaging periods for the daily means and standard deviations of the zonal and meridional components. Some results of this smoothing process are illustrated in figure 9 which shows the daily values of the zonal means for several averaging periods. The degree of smoothing shown here is typical of all the parameters and all altitudes. It can be seen that a considerable amount of scatter remains even for a 2-week averaging interval. The 31-day average appears to be most suitable for launch operation applications. It may be noted that the standard calendar month average is a close approximation to the 31-day average for the 15th day of the month. This result suggests that standard calendar month averages may provide a sufficient basis for establishing the seasonal variations.

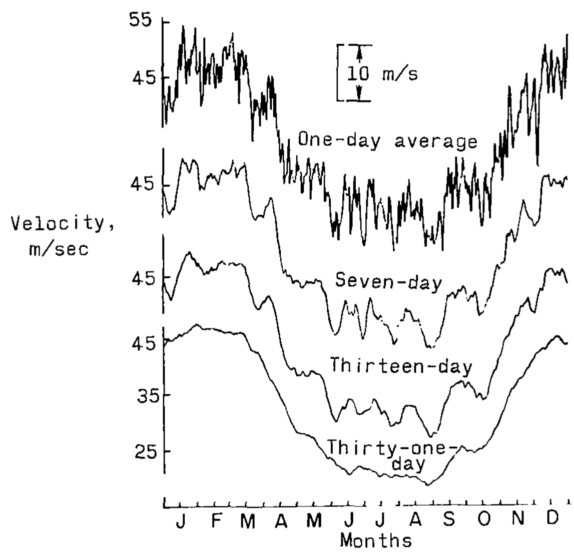


Figure 9.- Plots of daily values of mean of zonal component of wind velocity after smoothing with a running-mean filter function for 1-, 7-, 13-, and 31-day averaging periods.

Thirty-one-day averages of the zonal and meridional components and of their standard deviations are shown in figures 10 and 11. Seasonal variations are clearly evident in all these parameters, but the magnitude of variation of both standard deviations and the meridional velocity are small compared with the variation of the zonal component. Figure 10 shows that the annual mean meridional velocity is very near zero. It is also of interest to note from figure 11 that the standard deviations of the two

components are nearly equal to each other over the entire year. This equality is necessary if the frequently used circular normal distribution is to be a good approximation.

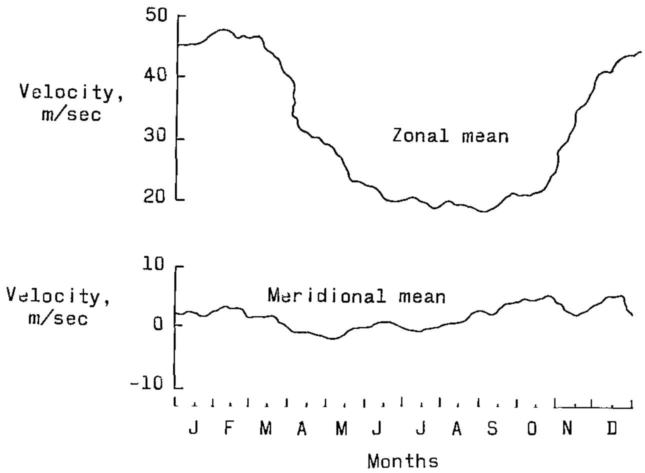


Figure 10.- Plots of daily values (after 31-day smoothing) of means of zonal and meridional components of wind velocity for altitude of 11 km.

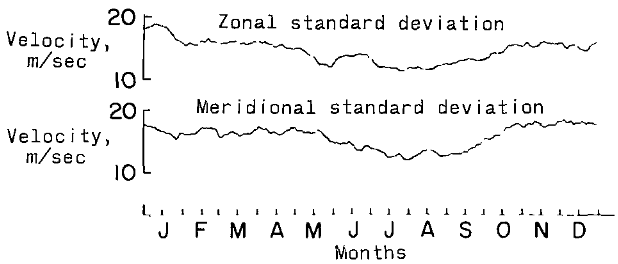


Figure 11.- Plots of daily values (after 31-day smoothing) of standard deviations of zonal and meridional components of wind velocity for altitude of 11 km.

Interpolation

A tabulation of the means and standard deviations of the Wallops Island wind data under discussion, day by day for each 1-km altitude interval, would exceed a hundred pages even with the smallest readable type size. Because of this great bulk of data, fitted curves or a simple interpolation scheme which would permit rapid determination of values for a given altitude and date from compact statistical data are of great utility.

When, it is possible to do so, it is desirable to utilize calendar month averages for making probability estimates instead of using the daily values which are not generally available.

Several types of smooth curves (for example, a first-order trigonometric series and a third-order polynomial) were fitted to the daily parameter values. Although the smooth curves provided a compact representation of the variations, they did not provide any improvement in the overall goodness of fit to the smooth seasonal patterns when compared with calendar month averages.

A simple linear interpolation of calendar month averages of the parameter values was also used to compute parameter values for individual calendar days. The goodness of fit of the linearly interpolated values and calendar month averages of the zonal mean to the actual daily values of the zonal mean at 11-km level is shown in figure 12. A statistic

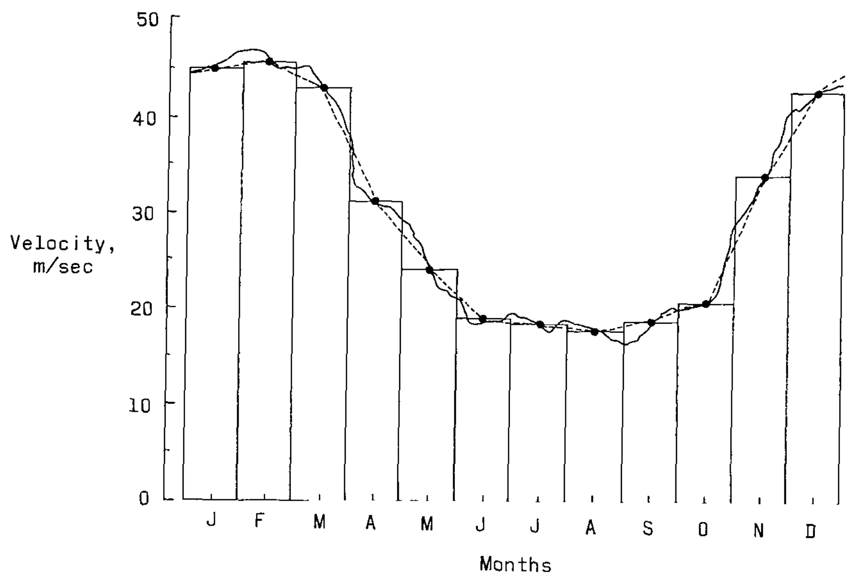


Figure 12.- Illustration of goodness of fit of calendar-month averages and linear interpolated values of the zonal mean wind to the computed daily values (after 31-day smoothing) of zonal mean at 11-km level.

which measures the goodness of fit of these curves is called the "percentage reduction of variance" and is defined as the ratio of the root-mean-square difference between a fitted curve and the actual daily values to the total variance of the daily values. The percentage reduction of variance statistics were computed for each altitude level and are plotted in figure 13. Figure 13 shows that the linear interpolation method provides a significantly better approximation of actual seasonal variations than do calendar month averages. Figure 13 also shows that the percentage reduction of variance values for the

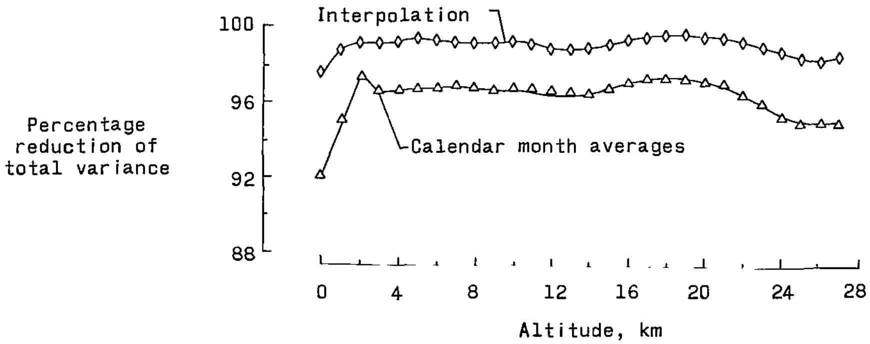


Figure 13.- Goodness of fit of two methods of estimating daily values of zonal mean wind for each altitude level (as measured by the percentage reduction of variance).

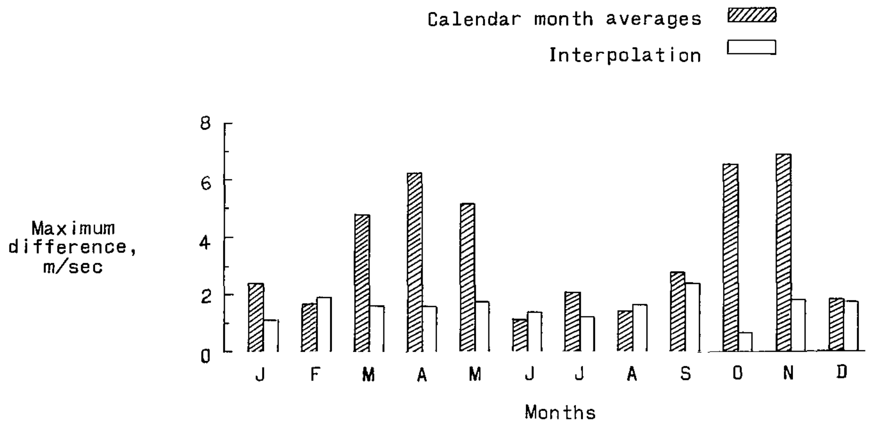


Figure 14.- Maximum differences at the 11-km level for each calendar month between actual daily values of zonal mean (after 31-day smoothing) and daily values computed by using (1) a step function of calendar-month averages, and (2) linear interpolation of calendar-month averages.

linear interpolation method was greater than 99 percent at most altitude levels (indicating a root-mean-square error of less than 1 percent). Another important measure of goodness of fit is the maximum difference between the fitted curves and the actual daily values of the zonal mean. Figure 14 shows these maximum differences during each calendar month for the curves which were plotted in figure 12. The maximum differences associated with the linear interpolation method are generally significantly smaller than the maximum differences associated with calendar month averages. Similar results were obtained by using linear interpolation to compute daily values of the meridional mean and the standard deviation components. Because of the small root-mean-square differences and small maximum differences associated with the linear interpolation method, more complicated interpolation schemes do not appear to be justified.

APPENDIX C

Since zonal and meridional winds of a given probability of occurrence are linear combinations of the mean and standard deviations of these components, direct linear interpolation of winds of a given probability of occurrence should have correspondingly small errors, and for a location such as Wallops Island where the wind distribution is approximately the circular form of the vector normal distribution, only slight increases in error would be expected for other directions.

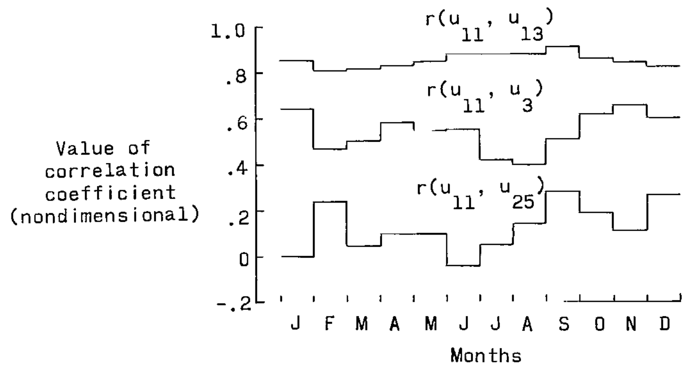
Seasonal Variations of Correlation Coefficients

The calendar month averages of the interlevel, intralevel, and crosslevel correlation coefficients were found to have a variety of seasonal patterns. The patterns of seasonal variation for each type of correlation coefficient are different and are dependent on the particular altitude levels involved. Some examples of the seasonal patterns of calendar month averages of the interlevel correlation coefficients between various levels are shown in figures 15. Figure 15(a) shows plots of the monthly values of the interlevel correlation coefficients between the zonal component at the 11-km level and the zonal components at the 3-, 13-, and 25-km levels. Figure 15(b) shows corresponding plots of the monthly values of the interlevel correlation coefficients between the meridional components at the 11-km level and the meridional components at the 3-, 13-, and 25-km levels. After examining the confidence intervals on the interlevel correlation (by the method suggested during the discussion of table I in "Accuracy of Data"), it was concluded that part of the erratic variation in values of the correlation coefficients is real (that is, it cannot be attributed to the limited sample size).

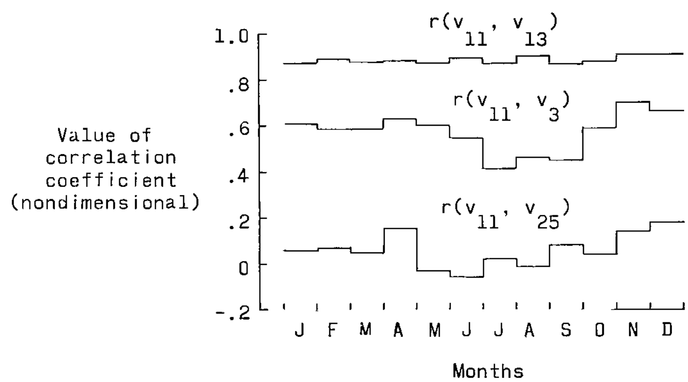
Other plots similar to those in figure 15 were examined for the other types of correlation coefficients but there appeared to be no uniform seasonal pattern affecting the interlevel, intralevel, crosslevel, or time-lag coefficients. However, it is believed that linear interpolation of the correlation coefficients estimated from a calendar month sample will provide improved estimates of the various types of correlation coefficients for a given calendar day.

Statistical Findings

The use of statistical parameters estimated from calendar month samples to compute probability estimates can sometimes introduce significant error at the beginning or end of a month, especially in spring or fall. Daily values of means and standard deviations from the presently available record require a large amount of smoothing. Fitted simple curves provide a compact representation which may be useful for understanding seasonal variations and for special purposes, but do not provide better estimates of daily parameter values than do calendar month averages.



(a) Interlevel correlation coefficients between zonal components.



(b) Interlevel correlation coefficients between meridional components.

Figure 15.- Variations of estimated values of interlevel correlation coefficients with calendar months.

Simple linear interpolation of calendar month estimates of the statistical parameters provides estimates of daily values with reduced average errors and reduced maximum errors. These interpolations can be made by using standard data tabulations, and this method is appropriate for making probability estimates for a given calendar day or any combination of calendar days.

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TABLE I.- NUMBER OF ORIGINAL OBSERVATIONS (PRIOR TO SERIAL COMPLETION) IN THE 9-YEAR SAMPLE

(a) Observations made 4 times daily for years 1956 to 1964 at Norfolk, Va.

Altitude, km	Number of observations for month of –											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Surface	1112	1003	1115	1079	1115	1080	1116	1108	1076	1116	1079	1112
1	1104	982	1103	1069	1106	1071	1109	1096	1065	1108	1068	1101
2	1103	993	1107	1073	1110	1077	1112	1102	1072	1112	1070	1109
3	1115	997	1107	1075	1112	1079	1114	1103	1071	1115	1076	1109
4	1101	993	1104	1074	1106	1074	1110	1101	1069	1110	1074	1104
5	1096	988	1101	1072	1104	1070	1108	1098	1064	1106	1073	1100
6	1089	981	1101	1071	1102	1069	1102	1095	1062	1116	1068	1096
7	1063	976	1089	1064	1100	1066	1100	1091	1057	1104	1064	1083
8	1035	955	1075	1048	1098	1063	1096	1087	1054	1093	1058	1065
9	996	919	1037	1030	1093	1062	1097	1084	1053	1090	1047	1025
10	943	872	994	1012	1088	1060	1089	1088	1050	1088	1032	981
11	876	819	947	986	1084	1052	1088	1087	1046	1093	1005	933
12	838	769	901	964	1069	1025	1082	1075	1039	1058	976	883
13	803	734	858	940	1049	1005	1069	1060	1027	1035	946	844
14	769	707	829	923	1033	991	1051	1042	1006	1011	900	805
15	738	690	800	905	1004	973	1024	1004	965	973	877	784
16	703	665	785	883	974	941	1000	972	929	950	860	765
17	673	642	757	850	935	918	966	938	908	919	827	743
18	648	618	745	799	913	902	950	912	888	883	811	722
19	633	608	730	782	890	890	927	897	869	861	795	704
20	611	606	719	756	868	862	906	879	855	848	786	684
21	607	590	705	728	839	830	881	852	837	824	778	660
22	586	569	676	697	808	792	854	820	814	799	737	639
23	544	537	631	645	765	733	798	774	774	760	700	615
24	503	491	565	615	710	659	706	705	718	694	660	575
25	447	425	471	549	624	571	613	620	643	601	584	523
26	383	349	401	483	520	481	521	512	547	486	498	449
27	302	279	316	376	428	374	412	400	454	356	375	353
Total number of possible observations	1116	1008	1116	1080	1116	1080	1116	1116	1080	1116	1080	1116

TABLE I.- NUMBER OF ORIGINAL OBSERVATIONS (PRIOR TO SERIAL COMPLETION) IN THE 9-YEAR SAMPLE – Concluded

(b) Observations made 4 times daily for years 1956 to 1964 at Washington, D.C.

Altitude, km	Number of observations for month of –											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Surface	1111	997	1109	1075	1113	1074	1112	1115	1076	1112	1076	1113
1	1059	956	1076	1051	1096	1055	1100	1101	1063	1090	1052	1077
2	1080	967	1084	1061	1105	1068	1110	1112	1063	1099	1066	1093
3	1081	967	1090	1058	1106	1065	1109	1114	1069	1103	1067	1096
4	1065	960	1087	1056	1103	1067	1108	1112	1072	1100	1056	1085
5	1049	931	1075	1045	1096	1067	1105	1109	1070	1100	1047	1081
6	1016	915	1055	1038	1087	1066	1099	1108	1066	1098	1028	1063
7	971	880	1026	1031	1084	1061	1095	1103	1009	1017	1003	1035
8	932	835	990	1012	1071	1059	1090	1097	996	1011	983	1001
9	888	796	957	992	1064	1056	1081	1094	887	1004	952	1063
10	835	758	906	971	1044	1052	1076	1084	1036	1073	907	907
11	786	704	867	942	1027	1044	1071	1075	1025	1054	874	853
12	744	765	828	917	997	1028	1066	1053	1008	1035	855	808
13	703	632	793	911	981	1027	1056	1037	985	1009	832	769
14	682	595	770	884	968	1006	1038	1020	954	984	819	734
15	656	569	753	857	961	985	1013	978	916	948	794	703
16	628	554	724	844	934	964	984	945	884	917	777	691
17	603	541	710	835	915	940	968	919	861	896	757	674
18	582	524	697	819	901	931	950	898	847	882	734	667
19	566	513	693	801	880	922	939	889	829	860	711	660
20	539	524	682	790	864	897	932	878	824	837	703	645
21	516	516	673	772	830	873	910	856	812	824	694	629
22	497	504	650	741	810	829	878	828	793	791	670	610
23	477	483	617	711	773	779	832	782	766	752	641	586
24	447	448	583	676	717	737	769	732	731	701	606	583
25	386	379	521	593	652	679	689	670	664	644	542	529
26	325	312	453	470	562	581	586	583	583	572	470	459
27	267	255	491	369	452	466	485	488	483	479	385	347
Total number of possible observations	1116	1008	1116	1080	1116	1080	1116	1116	1080	1116	1080	1116

TABLE II.- NUMBER OF ORIGINAL OBSERVATIONS (PRIOR TO SERIAL COMPLETION) IN THE 9-YEAR SAMPLE WHICH REQUIRED CORRECTIONS

(a) Observations made 4 times daily for years 1956 to 1964 at Norfolk, Va.

Altitude, km	Numbers of observations for month of –											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Surface	0	0	0	0	0	0	1	0	1	0	1	2
1	0	3	1	0	1	6	2	1	0	2	0	2
2	5	10	6	4	3	3	2	3	3	6	2	7
3	9	8	16	6	3	4	1	1	5	4	6	14
4	14	8	10	7	1	5	0	0	0	2	4	10
5	10	10	12	11	2	0	0	3	2	5	4	7
6	10	11	19	9	1	3	1	1	5	7	5	6
7	11	21	24	6	1	2	1	2	3	2	14	13
8	18	15	21	9	3	2	7	4	6	8	14	12
9	21	19	9	14	4	5	5	3	1	13	13	11
10	22	28	17	10	6	6	1	5	4	6	8	13
11	16	20	16	9	4	2	4	6	3	11	11	20
12	22	16	19	14	7	3	7	7	8	7	16	22
13	21	15	13	19	6	8	5	2	6	6	17	32
14	32	19	14	13	7	3	13	3	9	8	14	18
15	22	12	7	7	4	5	11	1	4	2	7	14
16	16	15	6	9	9	3	7	4	3	2	9	12
17	14	13	16	8	3	3	7	5	7	2	13	16
18	16	22	12	10	6	7	15	10	6	8	13	18
19	13	16	16	4	9	12	14	7	3	5	11	18
20	14	15	13	12	10	8	5	10	12	10	5	30
21	13	20	23	18	14	7	2	1	10	11	11	15
22	20	18	18	27	16	8	2	1	8	15	11	15
23	8	16	11	17	16	5	1	2	11	16	17	14
24	10	20	9	16	12	7	1	5	6	19	16	19
25	10	22	9	13	14	6	1	3	3	18	11	17
26	4	12	11	9	8	5	5	2	5	15	2	12
27	7	8	4	8	5	1	1	0	4	13	4	14
Total number of possible observations	1116	1008	1116	1080	1116	1080	1116	1116	1080	1116	1080	1116

TABLE II.- NUMBER OF ORIGINAL OBSERVATIONS (PRIOR TO SERIAL COMPLETION) IN THE 9-YEAR SAMPLE WHICH REQUIRED CORRECTIONS – Concluded

(b) Observations made 4 times daily for years 1956 to 1964 at Washington, D.C.

Altitude, km	Number of observations for month of –											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Surface	0	0	0	0	0	1	0	0	0	0	0	1
1	4	4	3	3	0	0	0	0	2	1	2	3
2	6	5	6	2	0	3	0	1	3	3	6	6
3	8	8	7	7	0	2	2	1	4	7	5	9
4	15	5	4	13	3	3	0	1	4	3	10	5
5	12	11	13	10	1	2	1	2	5	4	6	12
6	6	8	11	12	0	4	0	0	0	1	11	7
7	16	9	14	8	2	4	1	3	4	5	6	14
8	12	13	19	7	4	6	4	4	5	3	2	14
9	16	18	13	6	2	2	2	9	8	3	6	10
10	15	18	19	11	5	10	2	5	5	9	6	17
11	15	18	16	7	5	2	3	3	2	5	7	12
12	12	10	10	14	10	5	3	4	7	13	3	15
13	15	13	8	16	15	5	12	6	1	9	11	12
14	18	16	10	11	6	11	11	6	4	13	6	11
15	10	5	6	4	2	6	6	4	3	4	3	5
16	10	4	7	5	7	8	6	2	3	8	8	6
17	5	13	12	8	7	16	19	6	5	6	8	6
18	13	9	11	13	19	27	34	19	13	12	10	7
19	11	12	13	24	31	50	35	24	22	24	12	11
20	12	11	28	38	54	56	35	58	40	46	22	9
21	12	19	33	57	64	64	29	54	64	64	32	19
22	12	19	39	78	88	73	18	55	86	78	36	21
23	8	29	37	79	95	62	12	45	97	80	42	30
24	15	30	37	68	101	57	13	23	100	90	47	27
25	20	39	28	67	95	54	5	20	94	86	41	24
26	13	32	22	47	95	39	7	16	85	71	39	25
27	12	24	19	35	80	32	6	12	66	57	23	18
Total number of possible observations	1116	1008	1116	1080	1116	1080	1116	1116	1080	1116	1080	1116

TABLE III.- MEAN WIND SPEED FOR MONTHLY AND ANNUAL PERIODS AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE

[Sample includes observations made 4 times daily for years 1956 to 1964 at Norfolk and Washington stations]

(a) Zonal: positive wind components from west to east

Altitude, km	Zonal means, m/sec, for –												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Surface	1.512	1.242	1.017	1.024	0.100	0.270	0.571	0.092	-0.386	-0.116	0.926	1.260	0.626
1	7.221	7.018	5.769	6.123	3.886	3.108	3.714	2.569	1.254	1.626	5.359	7.089	4.561
2	11.697	11.757	9.802	9.196	6.588	4.849	5.360	4.593	3.163	3.916	8.577	11.389	7.574
3	16.155	16.260	13.788	11.822	8.575	6.305	6.880	6.079	5.028	5.941	11.992	15.785	10.384
4	20.483	20.714	17.611	14.617	10.567	7.732	8.179	7.269	6.818	7.927	15.063	20.048	13.086
5	24.592	24.670	21.256	17.287	12.472	9.061	9.390	8.435	8.462	9.845	17.816	23.805	15.591
6	28.602	28.660	25.122	19.885	14.348	10.409	10.621	9.681	10.015	11.576	20.704	27.493	18.093
7	32.561	32.856	29.225	22.458	16.192	11.778	12.078	11.194	11.563	13.455	23.429	31.076	20.655
8	36.607	37.206	33.560	25.001	17.982	13.268	13.536	12.722	13.151	15.531	26.294	34.759	23.301
9	40.352	41.294	37.550	27.449	19.729	14.781	14.957	14.235	14.649	17.579	28.970	38.081	25.802
10	43.792	44.800	40.954	29.859	21.435	16.276	16.216	15.704	15.998	19.583	31.527	41.020	28.097
11	45.618	46.921	42.920	31.829	23.006	17.808	17.382	17.215	17.691	21.932	34.157	42.927	29.951
12	45.049	46.562	42.130	31.721	23.392	18.858	17.971	18.114	18.932	23.275	34.557	42.663	30.269
13	42.175	43.302	39.031	29.219	21.879	18.239	16.941	17.351	18.846	23.044	32.773	39.651	28.538
14	38.345	38.747	34.637	26.021	19.363	15.722	14.317	15.108	16.905	21.155	29.417	35.718	25.455
15	34.371	34.129	30.268	22.596	15.910	12.363	10.781	11.811	14.356	18.477	25.879	31.775	21.893
16	30.463	29.491	25.750	18.756	12.661	8.809	6.917	8.232	11.198	15.215	21.922	27.968	18.115
17	26.352	24.249	20.942	14.472	9.325	5.181	3.037	4.529	7.564	11.818	17.653	23.936	14.088
18	22.490	18.866	15.986	10.474	5.846	1.989	-.320	1.292	4.496	8.681	13.821	20.108	10.311
19	18.936	14.607	11.639	7.118	2.922	-.799	-3.006	-1.500	2.135	6.369	10.756	16.815	7.166
20	16.076	11.336	8.321	4.515	.732	-2.923	-5.214	-3.817	.435	4.689	8.783	14.359	4.774
21	14.409	8.680	5.943	2.768	-.742	-4.677	-7.082	-5.653	-.921	3.755	7.728	13.181	3.116
22	13.620	6.669	4.193	1.812	-1.696	-5.921	-8.688	-7.174	-1.819	3.332	7.566	12.849	2.062
23	13.500	5.118	3.546	1.386	-2.089	-6.797	-10.017	-8.374	-2.480	3.449	8.042	13.377	1.555
24	13.811	4.081	2.979	1.224	-2.239	-7.476	-11.224	-9.528	-3.122	3.599	8.703	14.509	1.276
25	14.461	3.271	2.574	1.322	-2.107	-8.093	-12.329	-10.642	-3.572	4.052	9.738	16.275	.246
26	15.784	3.220	2.478	1.956	-1.766	-8.632	-13.324	-11.558	-3.955	4.873	11.206	18.531	1.568
27	17.043	3.311	2.600	2.876	-1.379	-9.272	-14.289	-12.352	-4.194	5.827	13.010	21.003	2.015

(b) Meridional: positive wind components from south to north

Altitude, km	Meridional means, m/sec, for –												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Surface	-1.057	-0.819	-0.885	0.325	0.391	0.468	0.884	0.352	-0.438	-1.148	-0.576	-0.584	-0.257
1	-1.439	-.370	-.842	.478	.137	.005	.695	-.080	-.603	-1.883	-.174	-.255	-.361
2	-1.348	-.657	-.999	-.362	-.898	-.532	-.157	-.837	-.645	-1.423	.010	-.219	-.672
3	.283	.192	-.706	-.634	-1.277	-.565	-.296	-.791	-.214	-.824	.935	.896	-.297
4	.339	.914	-.341	-.670	-1.471	-.559	-.234	-.737	.086	-.331	1.663	1.679	.028
5	.865	1.133	-.226	-.729	-1.581	-.491	-.267	-.744	.290	.179	2.106	2.436	.248
6	1.336	1.578	-.046	-.902	-1.441	-.492	-.477	-.590	.475	.723	2.573	3.053	.483
7	1.629	2.209	.414	-.983	-1.497	-.422	-.547	-.577	.891	1.287	2.956	3.692	.754
8	2.120	2.830	.980	-1.199	-1.596	-.174	-.636	-.420	1.230	2.104	3.195	4.348	1.065
9	2.421	3.328	1.581	-1.390	-1.625	.181	-.757	.038	1.577	2.965	3.296	4.910	1.377
10	2.529	3.377	1.982	-1.594	-1.875	.280	-1.137	.200	1.825	3.801	3.150	5.210	1.479
11	2.315	3.068	2.045	-1.760	-2.542	.069	-1.786	.097	2.015	4.597	2.751	4.819	1.307
12	1.774	2.246	1.535	-2.053	-3.018	-.535	-2.660	-.326	1.748	4.554	1.914	4.142	.777
13	1.242	1.702	1.082	-2.015	-2.874	-1.681	-3.282	-.871	1.239	3.818	1.276	3.850	.291
14	1.293	1.604	1.003	-1.609	-2.964	-2.486	-3.140	-1.000	.840	2.814	1.426	3.375	.096
15	1.283	1.393	.973	-1.339	-3.100	-2.685	-2.921	-1.213	.700	2.093	1.382	3.230	-.017
16	1.558	1.371	.924	-1.207	-2.756	-2.593	-2.393	-1.046	.354	1.617	1.117	2.977	-.006
17	1.375	1.261	.799	-.946	-2.294	-2.198	-1.741	-.782	.216	1.167	1.075	2.642	.048
18	1.342	1.128	.577	-.784	-1.885	-1.705	-1.237	-.412	.153	.906	.921	2.312	.110
19	1.171	.960	.320	-.610	-1.417	-1.219	-.760	-.070	.147	.637	.821	2.036	.168
20	1.136	.740	.228	-.474	-.959	-.895	-.507	-.047	.219	.487	.616	1.933	.206
21	1.254	.479	.258	-.365	-.724	-.670	-.319	-.023	.275	.388	.382	1.764	.225
22	1.376	.460	.371	-.238	-.525	-.543	-.282	-.027	.184	.371	.289	1.713	.262
23	1.591	.272	.396	-.171	-.431	-.413	-.284	-.073	.072	.384	.211	1.768	.277
24	1.753	-.003	.296	-.331	-.429	-.436	-.314	-.127	.024	.209	.107	1.901	.221
25	1.927	-.299	.154	-.425	-.383	-.430	-.343	-.202	-.055	.203	.061	1.936	.179
26	2.192	-.539	.034	-.500	-.392	-.539	-.519	-.368	-.153	.138	-.029	2.082	.117
27	2.323	-.773	-.164	-.593	-.419	-.651	-.777	-.550	-.253	-.028	-.254	2.208	.006

TABLE IV.- STANDARD DEVIATION OF COMPONENT OF WIND VELOCITY FOR MONTHLY AND ANNUAL PERIODS AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE

[Sample includes observations made 4 times daily for years 1956 to 1964 at Norfolk and Washington stations]

(a) Zonal: positive wind components from west to east

Altitude, km	Zonal standard deviation, m/sec, for –												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Surface	3.355	3.930	3.761	3.699	3.114	2.848	2.601	2.604	2.772	3.144	3.038	3.194	3.172
1	7.598	8.030	7.543	7.201	6.046	5.546	4.899	4.972	5.958	7.154	7.183	7.085	6.601
2	7.950	7.576	7.412	6.904	5.995	5.774	4.904	4.724	6.050	7.183	7.453	7.096	6.585
3	9.068	8.176	8.206	7.983	6.715	6.499	5.470	5.194	6.604	8.070	8.688	8.286	7.413
4	10.948	9.475	9.642	9.203	7.666	7.487	5.878	5.801	7.291	8.916	9.951	9.826	8.507
5	12.994	11.173	11.197	10.614	8.573	8.303	6.442	6.423	7.787	9.843	11.182	11.435	9.664
6	15.021	13.063	13.063	12.214	9.489	9.105	7.157	7.082	8.519	10.987	12.413	13.298	10.951
7	16.833	14.898	14.959	13.647	10.453	10.022	7.975	7.782	9.551	12.070	13.606	14.691	12.207
8	18.698	16.477	16.802	15.057	11.610	10.982	8.892	8.806	10.749	13.241	15.003	16.186	13.542
9	19.962	17.363	17.813	15.989	12.803	12.059	9.990	9.817	12.069	14.158	16.016	17.071	14.592
10	20.065	17.721	17.994	16.554	13.802	13.292	11.154	11.092	13.464	14.995	16.820	17.592	15.379
11	19.399	17.369	17.760	16.569	14.227	14.549	12.309	12.163	14.752	15.634	17.075	17.540	15.779
12	18.251	16.510	16.685	15.399	13.771	14.861	12.984	12.880	15.532	14.993	16.027	16.612	15.375
13	16.537	14.609	15.072	13.507	12.211	13.661	12.356	12.185	15.042	13.606	14.368	15.492	14.054
14	14.556	12.682	13.110	11.154	10.177	11.600	10.604	10.320	12.828	11.814	12.557	13.905	12.109
15	12.967	11.126	11.249	9.191	8.344	9.372	8.452	8.161	10.322	9.872	10.757	12.388	10.183
16	11.678	10.254	10.020	7.901	7.435	7.661	6.541	6.397	8.355	8.121	9.205	11.466	8.753
17	10.737	9.292	9.014	6.464	6.521	6.317	5.052	5.082	6.740	6.779	8.015	10.905	7.576
18	9.822	8.520	8.154	5.595	5.620	5.028	4.101	4.264	5.771	5.911	7.059	10.075	6.660
19	8.874	8.124	7.539	4.959	4.847	4.163	3.395	3.721	4.831	5.314	6.336	9.510	5.968
20	8.377	7.850	7.578	4.757	4.197	3.831	3.150	3.394	4.416	5.021	5.933	9.357	5.655
21	8.413	7.900	7.796	5.014	3.847	3.657	3.088	3.309	4.206	5.027	6.001	9.542	5.650
22	9.010	8.073	8.466	5.424	3.852	3.723	3.078	3.422	4.188	5.252	6.561	10.105	5.930
23	9.639	8.077	9.666	5.919	4.054	3.875	3.176	3.494	4.252	5.649	7.197	10.793	6.316
24	10.649	8.193	10.760	6.401	4.513	4.034	3.325	3.671	4.217	5.978	7.834	11.506	6.757
25	11.899	8.438	12.068	7.089	5.135	4.326	3.513	3.898	4.385	6.384	8.945	12.645	7.394
26	13.462	9.003	13.048	7.868	5.735	4.658	3.845	4.082	4.626	7.061	10.089	13.971	8.121
27	15.261	9.761	13.979	8.879	6.399	4.989	4.209	4.285	4.901	7.845	11.272	15.198	8.915

(b) Meridional: positive wind components from south to north

Altitude, km	Meridional standard deviation, m/sec, for –												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Surface	4.138	4.033	4.110	4.014	3.420	3.010	2.834	2.966	3.523	3.652	4.165	3.951	3.651
1	9.022	8.620	8.594	8.406	6.352	5.356	4.938	5.006	5.929	6.650	8.562	8.170	7.134
2	9.424	9.121	8.732	7.929	6.022	5.035	4.567	4.812	5.358	6.371	8.598	8.522	7.041
3	10.029	9.445	9.242	8.689	7.005	5.599	4.847	5.178	5.688	7.074	9.572	9.447	7.651
4	11.239	10.388	10.052	9.554	8.064	6.499	5.369	5.774	6.223	8.037	11.167	10.760	8.594
5	12.702	11.501	11.273	10.818	9.089	7.170	5.763	6.284	6.856	9.128	12.790	12.303	9.640
6	14.272	12.978	12.867	12.223	10.141	7.885	6.455	6.822	7.505	10.459	14.498	14.187	10.858
7	15.558	14.743	14.469	13.837	11.287	8.893	7.337	7.837	8.368	11.856	16.101	15.983	12.189
8	16.831	16.419	16.194	15.392	12.714	10.096	8.607	9.119	9.520	13.258	17.665	17.749	13.630
9	17.840	17.802	17.409	16.562	14.261	11.440	10.352	10.716	10.895	14.572	18.846	19.184	14.990
10	17.811	18.202	17.751	17.453	15.624	12.992	12.089	12.880	12.436	15.736	19.351	19.740	16.005
11	17.233	17.570	17.279	17.571	16.626	14.273	13.526	14.626	13.505	16.144	19.240	19.168	16.397
12	15.266	16.098	15.414	16.187	15.787	14.539	13.948	15.359	13.818	15.113	17.881	17.220	15.552
13	12.749	13.612	13.083	13.104	13.171	12.830	12.841	13.585	12.896	13.262	15.519	14.416	13.422
14	10.724	11.528	10.918	10.955	10.452	10.147	10.090	10.546	10.606	11.141	12.781	12.025	10.993
15	9.070	9.792	9.187	9.234	8.674	7.962	7.749	7.907	8.457	9.073	10.589	10.203	8.991
16	7.993	8.383	7.518	7.935	7.444	6.265	6.079	5.929	6.790	7.270	9.005	8.710	7.443
17	6.911	7.097	6.355	6.762	6.319	4.875	4.562	4.380	5.182	5.833	7.362	7.441	6.090
18	6.023	5.972	5.325	5.461	5.146	3.791	3.526	3.411	3.996	4.741	6.019	6.399	4.984
19	5.601	5.241	4.586	4.554	4.184	3.145	2.846	2.751	3.152	4.080	5.247	5.562	4.246
20	5.333	4.898	4.225	3.928	3.377	2.818	2.450	2.433	2.768	3.525	4.665	5.025	3.787
21	5.520	4.759	4.116	3.527	2.900	2.540	2.195	2.262	2.610	3.334	4.340	4.924	3.586
22	5.949	4.798	4.239	3.436	2.671	2.282	2.131	2.133	2.480	3.311	4.356	4.856	3.554
23	6.438	4.870	4.394	3.427	2.678	2.217	2.077	2.127	2.359	3.263	4.590	5.235	3.640
24	7.096	4.830	4.593	3.553	2.725	2.189	2.077	2.118	2.266	3.244	4.785	5.608	3.757
25	7.792	4.901	4.877	3.809	2.751	2.212	2.150	2.198	2.299	3.414	5.041	6.110	3.963
26	8.752	5.204	5.062	4.212	2.953	2.161	2.209	2.320	2.349	3.577	5.430	6.663	4.241
27	9.804	5.703	5.414	4.648	3.055	2.310	2.472	2.487	2.351	3.729	5.968	7.446	4.615

TABLE V.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN ZONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE

[Sample includes observations made 4 times daily for years 1956 to 1964 at Norfolk and Washington stations]

(a) January

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of —													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.527	0.272	0.199	0.185	0.149	0.125	0.102	0.068	0.037	-0.007	-0.071	-0.107	-0.117
1	0.527	1.000	0.749	0.595	0.498	0.433	0.396	0.360	0.327	0.298	0.262	0.219	0.202	0.184
2	0.272	0.749	1.000	0.855	0.754	0.689	0.645	0.606	0.571	0.548	0.521	0.479	0.455	0.427
3	0.199	0.595	0.855	1.000	0.908	0.845	0.803	0.766	0.731	0.702	0.672	0.627	0.598	0.566
4	0.185	0.498	0.754	0.908	1.000	0.938	0.891	0.854	0.815	0.778	0.741	0.686	0.642	0.605
5	0.149	0.433	0.689	0.845	0.938	1.000	0.953	0.911	0.869	0.829	0.792	0.732	0.681	0.642
6	0.125	0.396	0.645	0.803	0.891	0.953	1.000	0.958	0.912	0.869	0.830	0.770	0.716	0.671
7	0.102	0.360	0.606	0.766	0.854	0.911	0.958	1.000	0.959	0.916	0.871	0.806	0.743	0.688
8	0.068	0.327	0.571	0.731	0.815	0.869	0.912	0.959	1.000	0.963	0.912	0.841	0.771	0.708
9	0.037	0.298	0.548	0.702	0.778	0.829	0.869	0.916	0.963	1.000	0.956	0.882	0.803	0.730
10	-0.007	0.262	0.521	0.672	0.741	0.792	0.830	0.871	0.912	0.956	1.000	0.940	0.854	0.775
11	-0.071	0.219	0.479	0.627	0.686	0.732	0.770	0.806	0.841	0.882	0.940	1.000	0.932	0.848
12	-0.107	0.202	0.455	0.598	0.642	0.681	0.716	0.743	0.771	0.803	0.854	0.932	1.000	0.926
13	-0.117	0.184	0.427	0.566	0.605	0.642	0.671	0.688	0.708	0.730	0.775	0.848	0.926	1.000
14	-0.106	0.186	0.421	0.549	0.580	0.614	0.638	0.652	0.661	0.676	0.712	0.777	0.850	0.923
15	-0.100	0.183	0.413	0.532	0.557	0.588	0.611	0.617	0.621	0.632	0.666	0.729	0.800	0.857
16	-0.085	0.173	0.397	0.504	0.531	0.558	0.579	0.578	0.577	0.580	0.610	0.673	0.745	0.799
17	-0.087	0.149	0.363	0.460	0.487	0.512	0.531	0.528	0.521	0.517	0.543	0.604	0.677	0.731
18	-0.096	0.121	0.328	0.422	0.451	0.473	0.491	0.487	0.478	0.472	0.495	0.546	0.603	0.657
19	-0.091	0.098	0.280	0.370	0.396	0.412	0.426	0.424	0.408	0.405	0.425	0.476	0.531	0.577
20	-0.057	0.095	0.247	0.325	0.340	0.346	0.351	0.345	0.332	0.324	0.333	0.375	0.439	0.474
21	-0.031	0.076	0.212	0.272	0.277	0.281	0.284	0.279	0.265	0.250	0.252	0.276	0.331	0.363
22	-0.023	0.059	0.156	0.196	0.202	0.207	0.200	0.200	0.183	0.169	0.170	0.189	0.238	0.260
23	0.005	0.062	0.121	0.143	0.147	0.142	0.132	0.123	0.105	0.089	0.095	0.115	0.157	0.173
24	0.023	0.053	0.087	0.091	0.086	0.080	0.068	0.054	0.034	0.016	0.019	0.039	0.076	0.090
25	0.026	0.028	0.042	0.036	0.034	0.033	0.025	0.012	0.001	-0.019	-0.017	-0.000	0.036	0.052
26	0.037	0.014	0.011	0.008	0.007	0.007	-0.001	-0.010	-0.016	-0.033	-0.028	-0.017	0.014	0.023
27	0.057	0.023	0.012	0.004	0.003	0.002	-0.010	-0.017	-0.027	-0.044	-0.041	-0.027	0.001	0.012

(a) January — Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of —													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.106	-0.100	-0.085	-0.087	-0.096	-0.091	-0.057	-0.031	-0.023	0.005	0.023	0.026	0.037	0.057
1	0.186	0.183	0.173	0.149	0.121	0.098	0.095	0.076	0.059	0.062	0.053	0.028	0.014	0.023
2	0.421	0.413	0.397	0.363	0.328	0.280	0.247	0.212	0.156	0.121	0.087	0.042	0.011	0.012
3	0.549	0.532	0.504	0.460	0.422	0.370	0.325	0.272	0.196	0.143	0.091	0.036	0.008	0.004
4	0.580	0.557	0.531	0.487	0.451	0.396	0.340	0.277	0.202	0.147	0.086	0.034	0.007	0.003
5	0.614	0.588	0.558	0.512	0.473	0.412	0.346	0.281	0.207	0.142	0.080	0.033	0.007	0.002
6	0.638	0.611	0.579	0.531	0.491	0.426	0.351	0.284	0.200	0.132	0.068	0.025	-0.001	-0.010
7	0.652	0.617	0.578	0.528	0.487	0.424	0.345	0.279	0.200	0.123	0.054	0.012	-0.010	-0.017
8	0.661	0.621	0.577	0.521	0.478	0.408	0.332	0.265	0.183	0.105	0.034	0.001	-0.016	-0.027
9	0.676	0.632	0.580	0.517	0.472	0.405	0.324	0.250	0.169	0.089	0.016	-0.019	-0.033	-0.044
10	0.712	0.666	0.610	0.543	0.495	0.425	0.333	0.252	0.170	0.095	0.019	-0.017	-0.028	-0.041
11	0.777	0.729	0.673	0.604	0.546	0.476	0.375	0.276	0.189	0.115	0.039	-0.000	-0.017	-0.027
12	0.850	0.800	0.745	0.677	0.603	0.531	0.439	0.331	0.238	0.157	0.076	0.036	0.014	0.001
13	0.923	0.857	0.799	0.731	0.657	0.577	0.474	0.363	0.260	0.173	0.090	0.052	0.023	0.012
14	1.000	0.923	0.836	0.769	0.694	0.603	0.496	0.392	0.277	0.179	0.094	0.048	0.020	0.009
15	0.923	1.000	0.911	0.814	0.738	0.645	0.539	0.432	0.316	0.213	0.125	0.076	0.039	0.024
16	0.836	0.911	1.000	0.900	0.798	0.714	0.609	0.501	0.376	0.273	0.189	0.130	0.087	0.062
17	0.769	0.814	0.900	1.000	0.897	0.767	0.657	0.559	0.439	0.330	0.246	0.187	0.141	0.110
18	0.694	0.738	0.798	0.897	1.000	0.880	0.732	0.624	0.506	0.396	0.309	0.253	0.207	0.168
19	0.603	0.645	0.714	0.767	0.880	1.000	0.863	0.706	0.580	0.478	0.396	0.336	0.289	0.246
20	0.496	0.539	0.609	0.657	0.732	0.863	1.000	0.853	0.704	0.606	0.525	0.457	0.405	0.357
21	0.392	0.432	0.501	0.559	0.624	0.706	0.853	1.000	0.867	0.729	0.637	0.569	0.519	0.463
22	0.277	0.316	0.376	0.439	0.506	0.580	0.704	0.867	1.000	0.886	0.772	0.695	0.629	0.568
23	0.179	0.213	0.273	0.330	0.396	0.478	0.606	0.729	0.886	1.000	0.911	0.810	0.738	0.680
24	0.094	0.125	0.189	0.246	0.309	0.396	0.525	0.637	0.772	0.911	1.000	0.928	0.845	0.782
25	0.048	0.076	0.130	0.187	0.253	0.336	0.457	0.569	0.695	0.810	0.928	1.000	0.942	0.875
26	0.020	0.039	0.087	0.141	0.207	0.289	0.405	0.519	0.629	0.738	0.845	0.942	1.000	0.955
27	0.009	0.024	0.062	0.110	0.168	0.246	0.357	0.463	0.568	0.680	0.782	0.875	0.955	1.000

TABLE V.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN ZONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(b) February

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.627	0.392	0.291	0.253	0.228	0.216	0.184	0.150	0.108	0.047	−0.020	−0.078	−0.105
1	0.627	1.000	0.736	0.552	0.461	0.402	0.365	0.328	0.281	0.228	0.178	0.141	0.109	0.101
2	0.392	0.736	1.000	0.816	0.687	0.613	0.560	0.512	0.462	0.406	0.353	0.297	0.267	0.271
3	0.291	0.552	0.816	1.000	0.880	0.785	0.729	0.684	0.640	0.585	0.527	0.459	0.418	0.400
4	0.253	0.461	0.687	0.880	1.000	0.904	0.838	0.787	0.737	0.681	0.617	0.546	0.490	0.460
5	0.228	0.402	0.613	0.785	0.904	1.000	0.934	0.878	0.822	0.758	0.690	0.611	0.542	0.507
6	0.216	0.365	0.560	0.729	0.838	0.934	1.000	0.945	0.886	0.819	0.746	0.657	0.576	0.530
7	0.184	0.328	0.512	0.684	0.787	0.878	0.945	1.000	0.948	0.880	0.810	0.719	0.627	0.572
8	0.150	0.281	0.462	0.640	0.737	0.822	0.886	0.948	1.000	0.944	0.872	0.776	0.672	0.607
9	0.108	0.228	0.406	0.585	0.681	0.758	0.819	0.880	0.944	1.000	0.937	0.843	0.733	0.654
10	0.047	0.178	0.353	0.527	0.617	0.690	0.746	0.810	0.872	0.937	1.000	0.922	0.810	0.721
11	−0.020	0.141	0.297	0.459	0.546	0.611	0.657	0.719	0.776	0.843	0.922	1.000	0.906	0.801
12	−0.078	0.109	0.267	0.418	0.490	0.542	0.576	0.627	0.672	0.733	0.810	0.906	1.000	0.897
13	−0.105	0.101	0.271	0.400	0.460	0.507	0.530	0.572	0.607	0.654	0.721	0.801	0.897	1.000
14	−0.106	0.094	0.254	0.367	0.429	0.473	0.495	0.530	0.558	0.597	0.659	0.727	0.783	0.879
15	−0.094	0.077	0.230	0.344	0.411	0.449	0.462	0.488	0.513	0.550	0.601	0.657	0.702	0.767
16	−0.090	0.073	0.223	0.327	0.399	0.430	0.435	0.452	0.465	0.487	0.533	0.579	0.626	0.688
17	−0.104	0.044	0.203	0.293	0.362	0.389	0.388	0.403	0.407	0.420	0.461	0.495	0.538	0.604
18	−0.101	0.009	0.160	0.251	0.313	0.339	0.336	0.347	0.338	0.345	0.383	0.409	0.446	0.508
19	−0.077	−0.001	0.126	0.213	0.270	0.289	0.281	0.289	0.280	0.281	0.316	0.328	0.354	0.409
20	−0.045	0.009	0.104	0.193	0.252	0.265	0.250	0.252	0.243	0.242	0.277	0.283	0.310	0.354
21	−0.022	0.018	0.090	0.165	0.216	0.224	0.215	0.216	0.201	0.203	0.236	0.240	0.265	0.302
22	−0.015	0.021	0.094	0.176	0.221	0.233	0.223	0.223	0.202	0.199	0.231	0.225	0.237	0.273
23	−0.002	0.044	0.101	0.175	0.204	0.211	0.204	0.202	0.181	0.184	0.222	0.225	0.243	0.278
24	0.008	0.067	0.112	0.185	0.208	0.209	0.203	0.203	0.177	0.183	0.224	0.233	0.255	0.291
25	0.023	0.097	0.138	0.200	0.217	0.208	0.205	0.205	0.183	0.194	0.235	0.242	0.265	0.298
26	0.038	0.103	0.142	0.195	0.212	0.198	0.199	0.203	0.186	0.200	0.236	0.245	0.266	0.292
27	0.032	0.102	0.137	0.188	0.206	0.192	0.202	0.210	0.200	0.210	0.243	0.251	0.273	0.299

(b) February – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	−0.106	−0.094	−0.090	−0.104	−0.101	−0.077	−0.045	−0.022	−0.015	−0.002	0.008	0.023	0.038	0.032
1	0.094	0.077	0.073	0.044	0.009	−0.001	0.009	0.018	0.021	0.044	0.067	0.097	0.103	0.102
2	0.254	0.230	0.223	0.203	0.160	0.126	0.104	0.090	0.094	0.101	0.112	0.138	0.142	0.137
3	0.367	0.344	0.327	0.293	0.251	0.213	0.193	0.165	0.176	0.175	0.185	0.200	0.195	0.188
4	0.429	0.411	0.399	0.362	0.313	0.270	0.252	0.216	0.221	0.204	0.208	0.217	0.212	0.206
5	0.473	0.449	0.430	0.389	0.339	0.289	0.265	0.224	0.233	0.211	0.209	0.208	0.198	0.192
6	0.495	0.462	0.435	0.388	0.336	0.281	0.250	0.215	0.223	0.204	0.203	0.205	0.199	0.202
7	0.530	0.488	0.452	0.403	0.347	0.289	0.252	0.216	0.223	0.202	0.203	0.205	0.203	0.210
8	0.558	0.513	0.465	0.407	0.338	0.280	0.243	0.201	0.202	0.181	0.177	0.183	0.186	0.200
9	0.597	0.550	0.487	0.420	0.345	0.281	0.242	0.203	0.199	0.184	0.183	0.194	0.200	0.210
10	0.659	0.601	0.533	0.461	0.383	0.316	0.277	0.236	0.231	0.222	0.224	0.235	0.236	0.243
11	0.727	0.657	0.579	0.495	0.409	0.328	0.283	0.240	0.225	0.225	0.233	0.242	0.245	0.251
12	0.783	0.702	0.626	0.538	0.446	0.354	0.310	0.265	0.237	0.243	0.255	0.265	0.266	0.273
13	0.879	0.767	0.688	0.604	0.508	0.409	0.354	0.302	0.273	0.278	0.291	0.298	0.292	0.299
14	1.000	0.886	0.759	0.659	0.568	0.455	0.398	0.334	0.292	0.285	0.296	0.305	0.294	0.291
15	0.886	1.000	0.879	0.734	0.638	0.535	0.456	0.390	0.342	0.310	0.308	0.306	0.294	0.285
16	0.759	0.879	1.000	0.867	0.716	0.621	0.541	0.476	0.431	0.389	0.368	0.347	0.319	0.295
17	0.659	0.734	0.867	1.000	0.850	0.703	0.625	0.550	0.508	0.456	0.414	0.368	0.335	0.293
18	0.568	0.638	0.716	0.850	1.000	0.849	0.711	0.639	0.591	0.538	0.484	0.424	0.386	0.324
19	0.455	0.535	0.621	0.703	0.849	1.000	0.848	0.722	0.665	0.608	0.556	0.480	0.425	0.348
20	0.398	0.456	0.541	0.625	0.711	0.848	1.000	0.852	0.759	0.697	0.637	0.559	0.503	0.413
21	0.334	0.390	0.476	0.550	0.639	0.722	0.852	1.000	0.883	0.780	0.698	0.614	0.550	0.457
22	0.292	0.342	0.431	0.508	0.591	0.665	0.759	0.883	1.000	0.897	0.789	0.690	0.617	0.521
23	0.285	0.310	0.389	0.456	0.538	0.608	0.697	0.780	0.897	1.000	0.894	0.779	0.693	0.595
24	0.296	0.308	0.368	0.414	0.484	0.556	0.637	0.698	0.789	0.894	1.000	0.896	0.789	0.691
25	0.305	0.306	0.347	0.368	0.424	0.480	0.559	0.614	0.690	0.779	0.896	1.000	0.915	0.818
26	0.294	0.294	0.319	0.335	0.386	0.425	0.503	0.550	0.617	0.693	0.789	0.915	1.000	0.926
27	0.291	0.285	0.295	0.293	0.324	0.348	0.413	0.457	0.521	0.595	0.691	0.818	0.926	1.000

TABLE V.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN ZONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE — Continued

(c) March

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of —												
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.606	0.359	0.279	0.223	0.183	0.170	0.155	0.125	0.082	0.033	-0.017	-0.054	-0.036
1	0.606	1.000	0.723	0.539	0.460	0.396	0.359	0.322	0.285	0.238	0.189	0.145	0.127	0.144
2	0.359	0.723	1.000	0.830	0.715	0.642	0.594	0.542	0.495	0.438	0.380	0.337	0.323	0.348
3	0.279	0.539	0.830	1.000	0.883	0.809	0.754	0.702	0.649	0.588	0.527	0.481	0.456	0.467
4	0.223	0.460	0.715	0.883	1.000	0.915	0.850	0.796	0.739	0.674	0.610	0.561	0.523	0.527
5	0.183	0.396	0.642	0.809	0.915	1.000	0.936	0.875	0.819	0.755	0.686	0.629	0.585	0.577
6	0.170	0.359	0.594	0.754	0.850	0.936	1.000	0.944	0.884	0.819	0.748	0.682	0.630	0.610
7	0.155	0.322	0.542	0.702	0.796	0.875	0.944	1.000	0.952	0.889	0.811	0.736	0.674	0.636
8	0.125	0.285	0.495	0.649	0.739	0.819	0.884	0.952	1.000	0.949	0.876	0.797	0.721	0.665
9	0.082	0.238	0.438	0.588	0.674	0.755	0.819	0.889	0.949	1.000	0.944	0.864	0.774	0.701
10	0.033	0.189	0.380	0.527	0.610	0.686	0.748	0.811	0.876	0.944	1.000	0.934	0.837	0.747
11	-0.017	0.145	0.337	0.481	0.561	0.629	0.682	0.736	0.797	0.864	0.934	1.000	0.916	0.818
12	-0.054	0.127	0.323	0.456	0.523	0.585	0.630	0.674	0.721	0.774	0.837	0.916	1.000	0.909
13	-0.036	0.144	0.348	0.467	0.527	0.577	0.610	0.636	0.665	0.701	0.747	0.818	0.909	1.000
14	-0.039	0.129	0.324	0.445	0.511	0.554	0.587	0.608	0.629	0.661	0.695	0.749	0.824	0.913
15	-0.036	0.119	0.300	0.406	0.469	0.510	0.545	0.565	0.585	0.617	0.644	0.690	0.761	0.840
16	-0.007	0.127	0.293	0.381	0.436	0.474	0.509	0.529	0.543	0.571	0.590	0.631	0.702	0.772
17	-0.021	0.088	0.248	0.331	0.376	0.416	0.442	0.465	0.481	0.498	0.509	0.544	0.619	0.679
18	-0.052	0.033	0.164	0.242	0.291	0.318	0.341	0.362	0.375	0.390	0.402	0.430	0.502	0.570
19	-0.040	0.004	0.096	0.160	0.191	0.209	0.228	0.248	0.264	0.279	0.292	0.307	0.367	0.443
20	-0.010	-0.005	0.063	0.103	0.120	0.138	0.154	0.166	0.173	0.186	0.189	0.201	0.258	0.328
21	0.002	-0.024	0.016	0.032	0.048	0.064	0.085	0.091	0.088	0.098	0.106	0.122	0.179	0.251
22	0.004	-0.035	-0.013	0.001	0.015	0.032	0.050	0.055	0.052	0.058	0.065	0.079	0.129	0.192
23	0.005	-0.047	-0.025	-0.020	-0.006	0.013	0.033	0.042	0.037	0.042	0.052	0.067	0.117	0.184
24	-0.020	-0.061	-0.022	-0.017	-0.008	0.008	0.024	0.031	0.026	0.032	0.044	0.053	0.104	0.172
25	-0.048	-0.079	-0.033	-0.031	-0.015	0.000	0.018	0.028	0.026	0.032	0.042	0.048	0.096	0.161
26	-0.052	-0.081	-0.043	-0.044	-0.031	-0.016	0.006	0.014	0.015	0.023	0.030	0.038	0.082	0.145
27	-0.048	-0.077	-0.053	-0.060	-0.051	-0.035	-0.015	-0.009	-0.010	-0.004	0.005	0.015	0.060	0.127

(c) March — Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of —												
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.039	-0.036	-0.007	-0.021	-0.052	-0.040	-0.010	0.002	0.004	0.005	-0.020	-0.048	-0.052	-0.048
1	0.129	0.119	0.127	0.088	0.033	0.004	-0.005	-0.024	-0.035	-0.047	-0.061	-0.079	-0.081	-0.077
2	0.324	0.300	0.293	0.248	0.164	0.096	0.063	0.016	-0.013	-0.025	-0.022	-0.033	-0.043	-0.053
3	0.445	0.406	0.381	0.331	0.242	0.160	0.103	0.032	0.001	-0.020	-0.017	-0.031	-0.044	-0.060
4	0.511	0.469	0.436	0.376	0.291	0.191	0.120	0.048	0.015	-0.006	-0.008	-0.015	-0.031	-0.051
5	0.554	0.510	0.474	0.416	0.318	0.209	0.138	0.064	0.032	0.013	0.008	0.000	-0.016	-0.035
6	0.587	0.545	0.509	0.442	0.341	0.228	0.154	0.085	0.050	0.033	0.024	0.018	0.006	-0.015
7	0.608	0.565	0.529	0.465	0.362	0.248	0.166	0.091	0.055	0.042	0.031	0.028	0.014	-0.009
8	0.629	0.585	0.543	0.481	0.375	0.264	0.173	0.088	0.052	0.037	0.026	0.026	0.015	-0.010
9	0.661	0.617	0.571	0.498	0.390	0.279	0.186	0.098	0.058	0.042	0.032	0.032	0.023	-0.004
10	0.695	0.644	0.590	0.509	0.402	0.292	0.189	0.106	0.065	0.052	0.044	0.042	0.030	0.005
11	0.749	0.690	0.631	0.544	0.430	0.307	0.201	0.122	0.079	0.067	0.053	0.048	0.038	0.015
12	0.824	0.761	0.702	0.619	0.502	0.367	0.258	0.179	0.129	0.117	0.104	0.096	0.082	0.060
13	0.913	0.840	0.772	0.679	0.570	0.443	0.328	0.251	0.192	0.184	0.172	0.161	0.145	0.127
14	1.000	0.906	0.801	0.701	0.615	0.495	0.378	0.304	0.242	0.221	0.210	0.197	0.179	0.158
15	0.906	1.000	0.881	0.731	0.645	0.539	0.432	0.348	0.280	0.263	0.250	0.228	0.207	0.187
16	0.801	0.881	1.000	0.860	0.707	0.597	0.507	0.427	0.355	0.340	0.319	0.292	0.278	0.257
17	0.701	0.731	0.860	1.000	0.842	0.679	0.580	0.505	0.451	0.424	0.395	0.370	0.356	0.333
18	0.615	0.645	0.707	0.842	1.000	0.837	0.683	0.614	0.569	0.539	0.515	0.493	0.478	0.449
19	0.495	0.539	0.597	0.679	0.837	1.000	0.842	0.732	0.685	0.648	0.632	0.607	0.595	0.567
20	0.378	0.432	0.507	0.580	0.683	0.842	1.000	0.866	0.769	0.733	0.721	0.703	0.692	0.665
21	0.304	0.348	0.427	0.505	0.614	0.732	0.866	1.000	0.884	0.806	0.794	0.771	0.753	0.728
22	0.242	0.280	0.355	0.451	0.569	0.685	0.769	0.884	1.000	0.911	0.858	0.829	0.808	0.785
23	0.221	0.263	0.340	0.424	0.539	0.648	0.733	0.806	0.911	1.000	0.937	0.887	0.859	0.834
24	0.210	0.250	0.319	0.395	0.515	0.632	0.721	0.794	0.858	0.937	1.000	0.957	0.916	0.889
25	0.197	0.228	0.292	0.370	0.493	0.607	0.703	0.771	0.829	0.887	0.957	1.000	0.966	0.928
26	0.179	0.207	0.278	0.356	0.478	0.595	0.692	0.753	0.808	0.859	0.916	0.966	1.000	0.967
27	0.158	0.187	0.257	0.333	0.449	0.567	0.665	0.728	0.785	0.834	0.889	0.928	0.967	1.000

TABLE V.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN ZONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(d) April

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.609	0.382	0.323	0.281	0.267	0.264	0.246	0.215	0.186	0.145	0.088	0.037	0.030
1	0.609	1.000	0.722	0.525	0.440	0.402	0.374	0.351	0.312	0.273	0.227	0.185	0.151	0.143
2	0.382	0.722	1.000	0.814	0.699	0.625	0.581	0.551	0.511	0.475	0.440	0.399	0.376	0.361
3	0.323	0.525	0.814	1.000	0.888	0.800	0.749	0.712	0.676	0.637	0.607	0.564	0.537	0.510
4	0.281	0.440	0.699	0.888	1.000	0.915	0.859	0.815	0.776	0.736	0.699	0.649	0.611	0.581
5	0.267	0.402	0.625	0.800	0.915	1.000	0.942	0.896	0.857	0.814	0.767	0.708	0.657	0.620
6	0.264	0.374	0.581	0.749	0.859	0.942	1.000	0.953	0.911	0.867	0.811	0.741	0.683	0.644
7	0.246	0.351	0.551	0.712	0.815	0.896	0.953	1.000	0.960	0.914	0.855	0.779	0.713	0.665
8	0.215	0.312	0.511	0.676	0.776	0.857	0.911	0.960	1.000	0.957	0.899	0.822	0.751	0.697
9	0.186	0.273	0.475	0.637	0.736	0.814	0.867	0.914	0.957	1.000	0.951	0.878	0.799	0.735
10	0.145	0.227	0.440	0.607	0.699	0.767	0.811	0.855	0.899	0.951	1.000	0.942	0.862	0.781
11	0.088	0.185	0.399	0.564	0.649	0.708	0.741	0.779	0.822	0.878	0.942	1.000	0.926	0.830
12	0.037	0.151	0.376	0.537	0.611	0.657	0.683	0.713	0.751	0.799	0.862	0.926	1.000	0.903
13	0.030	0.143	0.361	0.510	0.581	0.620	0.644	0.665	0.697	0.735	0.781	0.830	0.903	1.000
14	0.045	0.127	0.331	0.487	0.558	0.600	0.622	0.643	0.677	0.710	0.749	0.786	0.829	0.897
15	0.065	0.110	0.294	0.447	0.519	0.565	0.590	0.616	0.649	0.679	0.714	0.745	0.781	0.799
16	0.059	0.068	0.243	0.380	0.457	0.501	0.528	0.548	0.580	0.616	0.644	0.668	0.701	0.720
17	0.035	-0.002	0.158	0.287	0.360	0.406	0.431	0.456	0.489	0.535	0.565	0.582	0.607	0.620
18	0.008	-0.026	0.098	0.215	0.276	0.320	0.341	0.362	0.394	0.435	0.471	0.487	0.497	0.513
19	0.007	-0.039	0.076	0.194	0.238	0.277	0.297	0.320	0.339	0.373	0.408	0.425	0.429	0.438
20	0.007	-0.044	0.056	0.152	0.197	0.238	0.250	0.269	0.287	0.304	0.329	0.337	0.342	0.338
21	0.023	-0.036	0.027	0.106	0.150	0.185	0.197	0.222	0.230	0.242	0.259	0.265	0.271	0.272
22	0.026	-0.027	0.030	0.083	0.116	0.146	0.151	0.172	0.176	0.183	0.193	0.200	0.213	0.227
23	0.027	-0.028	0.024	0.066	0.093	0.123	0.125	0.141	0.143	0.146	0.150	0.156	0.175	0.199
24	0.034	-0.020	0.021	0.051	0.067	0.092	0.093	0.109	0.105	0.105	0.104	0.110	0.132	0.159
25	0.053	-0.005	0.006	0.033	0.054	0.073	0.075	0.095	0.090	0.094	0.096	0.095	0.109	0.138
26	0.050	-0.002	0.000	0.030	0.047	0.063	0.064	0.078	0.078	0.080	0.081	0.082	0.099	0.131
27	0.052	0.004	0.002	0.023	0.036	0.049	0.051	0.063	0.060	0.062	0.062	0.061	0.078	0.116

(d) April – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.045	0.065	0.059	0.035	0.008	0.007	0.007	0.023	0.026	0.027	0.034	0.053	0.050	0.052
1	0.127	0.110	0.068	-0.002	-0.026	-0.039	-0.044	-0.036	-0.027	-0.028	-0.020	-0.005	-0.002	0.004
2	0.331	0.294	0.243	0.158	0.098	0.076	0.056	0.027	0.030	0.024	0.021	0.006	0.000	0.002
3	0.487	0.447	0.380	0.287	0.215	0.194	0.152	0.106	0.083	0.066	0.051	0.033	0.030	0.023
4	0.558	0.519	0.457	0.360	0.276	0.238	0.197	0.150	0.116	0.093	0.067	0.054	0.047	0.036
5	0.600	0.565	0.501	0.406	0.320	0.277	0.238	0.185	0.146	0.123	0.092	0.073	0.063	0.049
6	0.622	0.590	0.528	0.431	0.341	0.297	0.250	0.197	0.151	0.125	0.093	0.075	0.064	0.051
7	0.643	0.616	0.548	0.456	0.362	0.320	0.269	0.222	0.172	0.141	0.109	0.095	0.078	0.063
8	0.677	0.649	0.580	0.489	0.394	0.339	0.287	0.230	0.176	0.143	0.105	0.090	0.078	0.060
9	0.710	0.679	0.616	0.535	0.435	0.373	0.304	0.242	0.183	0.146	0.105	0.094	0.080	0.062
10	0.749	0.714	0.644	0.565	0.471	0.408	0.329	0.259	0.193	0.150	0.104	0.096	0.081	0.062
11	0.786	0.745	0.668	0.582	0.487	0.425	0.337	0.265	0.200	0.156	0.110	0.095	0.082	0.061
12	0.829	0.781	0.701	0.607	0.497	0.429	0.342	0.271	0.213	0.175	0.132	0.109	0.099	0.078
13	0.897	0.799	0.720	0.620	0.513	0.438	0.338	0.272	0.227	0.199	0.159	0.138	0.131	0.116
14	1.000	0.879	0.761	0.668	0.567	0.481	0.366	0.284	0.234	0.209	0.170	0.146	0.135	0.119
15	0.879	1.000	0.866	0.713	0.626	0.534	0.408	0.335	0.280	0.250	0.211	0.190	0.178	0.158
16	0.761	0.866	1.000	0.822	0.653	0.562	0.435	0.368	0.325	0.299	0.259	0.243	0.235	0.222
17	0.668	0.713	0.822	1.000	0.790	0.623	0.520	0.442	0.381	0.352	0.304	0.292	0.281	0.258
18	0.567	0.626	0.653	0.790	1.000	0.768	0.581	0.533	0.467	0.424	0.378	0.365	0.349	0.317
19	0.481	0.534	0.562	0.623	0.768	1.000	0.760	0.643	0.571	0.525	0.479	0.450	0.423	0.388
20	0.366	0.408	0.435	0.520	0.581	0.760	1.000	0.796	0.667	0.616	0.576	0.541	0.498	0.459
21	0.284	0.335	0.368	0.442	0.533	0.643	0.796	1.000	0.831	0.720	0.673	0.645	0.596	0.552
22	0.234	0.280	0.325	0.381	0.467	0.571	0.667	0.831	1.000	0.871	0.780	0.737	0.687	0.653
23	0.209	0.250	0.299	0.352	0.424	0.525	0.616	0.720	0.871	1.000	0.902	0.832	0.784	0.753
24	0.170	0.211	0.259	0.304	0.378	0.479	0.576	0.673	0.780	0.902	1.000	0.918	0.852	0.807
25	0.146	0.190	0.243	0.292	0.365	0.450	0.541	0.645	0.737	0.832	0.918	1.000	0.939	0.880
26	0.135	0.178	0.235	0.281	0.349	0.423	0.498	0.596	0.687	0.784	0.852	0.939	1.000	0.949
27	0.119	0.158	0.222	0.258	0.317	0.388	0.459	0.552	0.653	0.753	0.807	0.880	0.949	1.000

TABLE V.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN ZONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(e) May

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.599	0.375	0.308	0.290	0.261	0.211	0.177	0.146	0.127	0.103	0.085	0.061	0.033
1	0.599	1.000	0.686	0.525	0.461	0.426	0.363	0.316	0.266	0.230	0.200	0.180	0.163	0.153
2	0.375	0.686	1.000	0.833	0.741	0.694	0.629	0.569	0.514	0.463	0.429	0.403	0.386	0.375
3	0.308	0.525	0.833	1.000	0.891	0.823	0.758	0.700	0.653	0.604	0.566	0.537	0.513	0.494
4	0.290	0.461	0.741	0.891	1.000	0.922	0.860	0.802	0.755	0.708	0.671	0.634	0.601	0.572
5	0.261	0.426	0.694	0.823	0.922	1.000	0.926	0.865	0.816	0.768	0.727	0.688	0.656	0.625
6	0.211	0.363	0.629	0.758	0.860	0.926	1.000	0.936	0.888	0.842	0.796	0.754	0.713	0.682
7	0.177	0.316	0.569	0.700	0.802	0.865	0.936	1.000	0.949	0.899	0.853	0.804	0.754	0.716
8	0.146	0.266	0.514	0.653	0.755	0.816	0.888	0.949	1.000	0.955	0.910	0.860	0.804	0.758
9	0.127	0.230	0.463	0.604	0.708	0.768	0.842	0.899	0.955	1.000	0.956	0.905	0.842	0.787
10	0.103	0.200	0.429	0.566	0.671	0.727	0.796	0.853	0.910	0.956	1.000	0.953	0.886	0.820
11	0.085	0.180	0.403	0.537	0.634	0.688	0.754	0.804	0.860	0.905	0.953	1.000	0.934	0.859
12	0.061	0.163	0.386	0.513	0.601	0.656	0.713	0.754	0.804	0.842	0.886	0.934	1.000	0.913
13	0.033	0.153	0.375	0.494	0.572	0.625	0.682	0.716	0.758	0.787	0.820	0.859	0.913	1.000
14	0.023	0.147	0.355	0.474	0.551	0.600	0.650	0.681	0.716	0.736	0.768	0.795	0.827	0.891
15	0.009	0.139	0.339	0.453	0.530	0.573	0.614	0.640	0.666	0.680	0.705	0.727	0.764	0.815
16	-0.011	0.100	0.289	0.397	0.463	0.504	0.546	0.576	0.601	0.612	0.640	0.660	0.698	0.748
17	-0.014	0.083	0.266	0.372	0.439	0.484	0.530	0.558	0.583	0.593	0.616	0.629	0.664	0.707
18	-0.011	0.053	0.223	0.331	0.404	0.451	0.492	0.519	0.542	0.554	0.564	0.585	0.617	0.654
19	-0.013	0.053	0.205	0.300	0.362	0.405	0.445	0.465	0.492	0.500	0.507	0.525	0.547	0.576
20	-0.017	0.036	0.171	0.266	0.321	0.355	0.396	0.409	0.434	0.440	0.451	0.469	0.479	0.506
21	-0.023	0.032	0.151	0.244	0.286	0.317	0.347	0.359	0.379	0.380	0.387	0.391	0.401	0.422
22	-0.019	0.008	0.105	0.165	0.201	0.219	0.248	0.253	0.267	0.274	0.275	0.276	0.285	0.306
23	-0.032	-0.042	0.027	0.078	0.112	0.119	0.145	0.156	0.166	0.175	0.178	0.179	0.189	0.200
24	-0.045	-0.060	-0.018	0.026	0.046	0.051	0.081	0.096	0.102	0.117	0.123	0.128	0.132	0.143
25	-0.028	-0.055	-0.018	0.016	0.026	0.030	0.053	0.068	0.074	0.083	0.086	0.095	0.102	0.116
26	-0.025	-0.033	-0.004	0.014	0.015	0.013	0.031	0.045	0.053	0.061	0.061	0.073	0.077	0.087
27	-0.035	-0.028	-0.008	-0.003	-0.007	-0.016	-0.002	0.011	0.020	0.024	0.023	0.033	0.038	0.058

(e) May – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.023	0.009	-0.011	-0.014	-0.011	-0.013	-0.017	-0.023	-0.019	-0.032	-0.045	-0.028	-0.025	-0.035
1	0.147	0.139	0.100	0.083	0.053	0.053	0.036	0.032	0.008	-0.042	-0.060	-0.055	-0.033	-0.028
2	0.355	0.339	0.289	0.266	0.223	0.205	0.171	0.151	0.105	0.027	-0.018	-0.018	-0.004	-0.008
3	0.474	0.453	0.397	0.372	0.331	0.300	0.266	0.244	0.165	0.078	0.026	0.016	0.014	-0.003
4	0.551	0.530	0.463	0.439	0.404	0.362	0.321	0.286	0.201	0.112	0.046	0.026	0.015	-0.007
5	0.600	0.573	0.504	0.484	0.451	0.405	0.355	0.317	0.219	0.119	0.051	0.030	0.013	-0.016
6	0.650	0.614	0.546	0.530	0.492	0.445	0.396	0.347	0.248	0.145	0.081	0.053	0.031	-0.002
7	0.681	0.640	0.576	0.558	0.519	0.465	0.409	0.359	0.253	0.156	0.096	0.068	0.045	0.011
8	0.716	0.666	0.601	0.583	0.542	0.492	0.434	0.379	0.267	0.166	0.102	0.074	0.053	0.020
9	0.736	0.680	0.612	0.593	0.554	0.500	0.440	0.380	0.274	0.175	0.117	0.083	0.061	0.024
10	0.768	0.705	0.640	0.616	0.564	0.507	0.451	0.387	0.275	0.178	0.123	0.086	0.061	0.023
11	0.795	0.727	0.660	0.629	0.585	0.525	0.469	0.391	0.276	0.179	0.128	0.095	0.073	0.033
12	0.827	0.764	0.698	0.664	0.617	0.547	0.479	0.401	0.285	0.189	0.132	0.102	0.077	0.038
13	0.891	0.815	0.748	0.707	0.654	0.576	0.506	0.422	0.306	0.200	0.143	0.116	0.087	0.058
14	1.000	0.892	0.798	0.754	0.702	0.628	0.546	0.449	0.340	0.233	0.171	0.145	0.107	0.073
15	0.892	1.000	0.889	0.805	0.742	0.666	0.586	0.494	0.376	0.274	0.216	0.183	0.142	0.110
16	0.798	0.889	1.000	0.887	0.784	0.707	0.620	0.531	0.422	0.334	0.265	0.232	0.189	0.154
17	0.754	0.805	0.887	1.000	0.857	0.734	0.646	0.563	0.467	0.368	0.287	0.253	0.213	0.171
18	0.702	0.742	0.784	0.857	1.000	0.835	0.703	0.613	0.529	0.431	0.358	0.319	0.277	0.234
19	0.628	0.666	0.707	0.734	0.835	1.000	0.827	0.678	0.574	0.488	0.433	0.399	0.349	0.314
20	0.546	0.586	0.620	0.646	0.703	0.827	1.000	0.789	0.638	0.540	0.492	0.456	0.405	0.372
21	0.449	0.494	0.531	0.563	0.613	0.678	0.789	1.000	0.795	0.633	0.558	0.524	0.485	0.450
22	0.340	0.376	0.422	0.467	0.529	0.574	0.638	0.795	1.000	0.791	0.647	0.607	0.573	0.536
23	0.233	0.274	0.334	0.368	0.431	0.488	0.540	0.633	0.791	1.000	0.845	0.748	0.698	0.651
24	0.171	0.216	0.265	0.287	0.358	0.433	0.492	0.558	0.647	0.845	1.000	0.889	0.807	0.747
25	0.145	0.183	0.232	0.253	0.319	0.399	0.456	0.524	0.607	0.748	0.889	1.000	0.917	0.835
26	0.107	0.142	0.189	0.213	0.277	0.349	0.405	0.485	0.573	0.698	0.807	0.917	1.000	0.924
27	0.073	0.110	0.154	0.171	0.234	0.314	0.372	0.450	0.536	0.651	0.747	0.835	0.924	1.000

TABLE V.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN ZONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(f) June

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.618	0.452	0.359	0.320	0.294	0.254	0.208	0.159	0.108	0.062	0.043	0.022	-0.024
1	0.618	1.000	0.750	0.577	0.512	0.474	0.436	0.374	0.311	0.239	0.186	0.154	0.128	0.098
2	0.452	0.750	1.000	0.857	0.765	0.717	0.665	0.607	0.539	0.466	0.411	0.372	0.346	0.329
3	0.359	0.577	0.857	1.000	0.912	0.854	0.798	0.750	0.694	0.626	0.572	0.533	0.501	0.482
4	0.320	0.512	0.765	0.912	1.000	0.930	0.875	0.828	0.777	0.717	0.661	0.620	0.589	0.564
5	0.294	0.474	0.717	0.854	0.930	1.000	0.935	0.888	0.839	0.781	0.725	0.682	0.647	0.622
6	0.254	0.436	0.665	0.798	0.875	0.935	1.000	0.947	0.898	0.841	0.786	0.740	0.709	0.689
7	0.208	0.374	0.607	0.750	0.828	0.888	0.947	1.000	0.954	0.903	0.849	0.801	0.762	0.739
8	0.159	0.311	0.539	0.694	0.777	0.839	0.898	0.954	1.000	0.955	0.904	0.860	0.820	0.790
9	0.108	0.239	0.466	0.626	0.717	0.781	0.841	0.903	0.955	1.000	0.957	0.917	0.875	0.841
10	0.062	0.186	0.411	0.572	0.661	0.725	0.786	0.849	0.904	0.957	1.000	0.961	0.916	0.872
11	0.043	0.154	0.372	0.533	0.620	0.682	0.740	0.801	0.860	0.917	0.961	1.000	0.957	0.902
12	0.022	0.128	0.346	0.501	0.589	0.647	0.709	0.762	0.820	0.875	0.916	0.957	1.000	0.942
13	-0.024	0.098	0.329	0.482	0.564	0.622	0.689	0.739	0.790	0.841	0.872	0.902	0.942	1.000
14	-0.024	0.106	0.342	0.494	0.574	0.633	0.694	0.738	0.776	0.812	0.821	0.838	0.859	0.914
15	-0.021	0.109	0.345	0.493	0.572	0.627	0.682	0.714	0.737	0.760	0.762	0.768	0.790	0.833
16	-0.021	0.098	0.327	0.473	0.549	0.591	0.637	0.658	0.671	0.690	0.686	0.692	0.723	0.764
17	-0.021	0.077	0.271	0.408	0.484	0.524	0.567	0.588	0.600	0.617	0.609	0.616	0.649	0.694
18	-0.051	0.053	0.216	0.324	0.381	0.425	0.474	0.486	0.494	0.508	0.510	0.521	0.558	0.613
19	-0.063	0.004	0.151	0.224	0.268	0.308	0.349	0.365	0.375	0.385	0.389	0.393	0.431	0.487
20	-0.059	-0.016	0.083	0.141	0.180	0.213	0.250	0.265	0.274	0.275	0.277	0.284	0.316	0.374
21	-0.045	-0.013	0.061	0.096	0.122	0.145	0.176	0.180	0.170	0.163	0.158	0.160	0.190	0.256
22	-0.022	0.002	0.066	0.083	0.093	0.105	0.131	0.120	0.101	0.093	0.086	0.077	0.106	0.160
23	-0.026	-0.039	0.013	0.020	0.026	0.035	0.046	0.030	0.015	0.010	0.003	-0.009	0.019	0.071
24	-0.023	-0.045	-0.017	-0.023	-0.013	-0.012	-0.007	-0.016	-0.033	-0.040	-0.043	-0.054	-0.030	0.013
25	-0.035	-0.076	-0.042	-0.038	-0.020	-0.022	-0.016	-0.016	-0.033	-0.033	-0.032	-0.039	-0.026	0.009
26	-0.074	-0.117	-0.084	-0.072	-0.052	-0.043	-0.034	-0.025	-0.030	-0.027	-0.023	-0.027	-0.011	0.024
27	-0.085	-0.114	-0.074	-0.061	-0.039	-0.034	-0.032	-0.025	-0.024	-0.016	-0.012	-0.014	0.003	0.038

(f) June – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.024	-0.021	-0.021	-0.021	-0.051	-0.063	-0.059	-0.045	-0.022	-0.026	-0.023	-0.035	-0.074	-0.085
1	0.106	0.109	0.098	0.077	0.053	0.004	-0.016	-0.013	0.002	-0.039	-0.045	-0.076	-0.117	-0.114
2	0.342	0.345	0.327	0.271	0.216	0.151	0.083	0.061	0.066	0.013	-0.017	-0.042	-0.084	-0.074
3	0.494	0.493	0.473	0.408	0.324	0.224	0.141	0.096	0.083	0.020	-0.023	-0.038	-0.072	-0.061
4	0.574	0.572	0.549	0.484	0.381	0.268	0.180	0.122	0.093	0.026	-0.013	-0.020	-0.052	-0.039
5	0.633	0.627	0.591	0.524	0.425	0.308	0.213	0.145	0.105	0.035	-0.012	-0.022	-0.043	-0.034
6	0.694	0.682	0.637	0.567	0.474	0.349	0.250	0.176	0.131	0.046	-0.007	-0.016	-0.034	-0.032
7	0.738	0.714	0.658	0.588	0.486	0.365	0.265	0.180	0.120	0.030	-0.016	-0.016	-0.025	-0.025
8	0.776	0.737	0.671	0.600	0.494	0.375	0.274	0.170	0.101	0.015	-0.033	-0.033	-0.030	-0.024
9	0.812	0.760	0.690	0.617	0.508	0.385	0.275	0.163	0.093	0.010	-0.040	-0.033	-0.027	-0.016
10	0.821	0.762	0.686	0.609	0.510	0.389	0.277	0.158	0.086	0.003	-0.043	-0.032	-0.023	-0.012
11	0.838	0.768	0.692	0.616	0.521	0.393	0.284	0.160	0.077	-0.009	-0.054	-0.039	-0.027	-0.014
12	0.859	0.790	0.723	0.649	0.558	0.431	0.316	0.190	0.106	0.019	-0.030	-0.026	-0.011	0.003
13	0.914	0.833	0.764	0.694	0.613	0.487	0.374	0.256	0.160	0.071	0.013	0.009	0.024	0.038
14	1.000	0.916	0.830	0.762	0.684	0.552	0.442	0.331	0.234	0.136	0.066	0.058	0.064	0.073
15	0.916	1.000	0.912	0.820	0.745	0.608	0.500	0.383	0.280	0.186	0.122	0.111	0.117	0.118
16	0.830	0.912	1.000	0.891	0.777	0.650	0.539	0.433	0.326	0.228	0.173	0.155	0.161	0.164
17	0.762	0.820	0.891	1.000	0.863	0.698	0.578	0.490	0.386	0.286	0.237	0.222	0.228	0.229
18	0.684	0.745	0.777	0.863	1.000	0.803	0.655	0.558	0.468	0.373	0.306	0.280	0.286	0.276
19	0.552	0.608	0.650	0.698	0.803	1.000	0.793	0.631	0.540	0.462	0.395	0.352	0.352	0.339
20	0.442	0.500	0.539	0.578	0.655	0.793	1.000	0.769	0.614	0.536	0.471	0.407	0.407	0.384
21	0.331	0.383	0.433	0.490	0.558	0.631	0.769	1.000	0.790	0.635	0.545	0.459	0.452	0.421
22	0.234	0.280	0.326	0.386	0.468	0.540	0.614	0.790	1.000	0.815	0.671	0.541	0.502	0.468
23	0.136	0.186	0.228	0.286	0.373	0.462	0.536	0.635	0.815	1.000	0.844	0.662	0.581	0.523
24	0.066	0.122	0.173	0.237	0.306	0.395	0.471	0.545	0.671	0.844	1.000	0.829	0.690	0.605
25	0.058	0.111	0.155	0.222	0.280	0.352	0.407	0.459	0.541	0.662	0.829	1.000	0.863	0.728
26	0.064	0.117	0.161	0.228	0.286	0.352	0.407	0.452	0.502	0.581	0.690	0.863	1.000	0.885
27	0.073	0.118	0.164	0.229	0.276	0.339	0.384	0.421	0.468	0.523	0.605	0.728	0.885	1.000

TABLE V.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN ZONAL COMPONENTS OF WIND VELOCITY

AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(g) July

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.573	0.423	0.363	0.319	0.297	0.244	0.198	0.151	0.104	0.057	0.027	-0.003	-0.016
1	0.573	1.000	0.708	0.550	0.481	0.427	0.361	0.288	0.219	0.152	0.088	0.053	0.026	0.016
2	0.423	0.708	1.000	0.839	0.747	0.675	0.605	0.532	0.463	0.388	0.320	0.276	0.250	0.247
3	0.363	0.550	0.839	1.000	0.881	0.794	0.715	0.647	0.584	0.520	0.458	0.418	0.394	0.392
4	0.319	0.481	0.747	0.881	1.000	0.899	0.819	0.752	0.691	0.633	0.571	0.528	0.506	0.505
5	0.297	0.427	0.675	0.794	0.899	1.000	0.904	0.843	0.784	0.724	0.663	0.618	0.595	0.593
6	0.244	0.361	0.605	0.715	0.819	0.904	1.000	0.917	0.852	0.791	0.727	0.676	0.647	0.641
7	0.198	0.288	0.532	0.647	0.752	0.843	0.917	1.000	0.930	0.870	0.810	0.758	0.730	0.711
8	0.151	0.219	0.463	0.584	0.691	0.784	0.852	0.930	1.000	0.934	0.871	0.821	0.787	0.767
9	0.104	0.152	0.388	0.520	0.633	0.724	0.791	0.870	0.934	1.000	0.942	0.893	0.855	0.821
10	0.057	0.088	0.320	0.458	0.571	0.663	0.727	0.810	0.871	0.942	1.000	0.951	0.905	0.859
11	0.027	0.053	0.276	0.418	0.528	0.618	0.676	0.758	0.821	0.893	0.951	1.000	0.952	0.892
12	-0.003	0.026	0.250	0.394	0.506	0.595	0.647	0.730	0.787	0.855	0.905	0.952	1.000	0.934
13	-0.016	0.016	0.247	0.392	0.505	0.593	0.641	0.711	0.767	0.821	0.859	0.892	0.934	1.000
14	-0.004	0.038	0.274	0.413	0.531	0.610	0.658	0.720	0.763	0.795	0.812	0.825	0.851	0.909
15	0.025	0.079	0.318	0.448	0.562	0.632	0.674	0.726	0.745	0.757	0.755	0.757	0.771	0.816
16	0.063	0.100	0.322	0.444	0.543	0.611	0.642	0.683	0.696	0.700	0.701	0.696	0.710	0.753
17	0.091	0.128	0.308	0.402	0.495	0.547	0.564	0.600	0.608	0.606	0.603	0.597	0.609	0.652
18	0.111	0.140	0.280	0.340	0.409	0.458	0.479	0.502	0.523	0.520	0.513	0.504	0.513	0.559
19	0.130	0.139	0.245	0.287	0.336	0.382	0.408	0.427	0.442	0.432	0.428	0.414	0.412	0.444
20	0.106	0.108	0.181	0.198	0.244	0.272	0.300	0.326	0.333	0.337	0.330	0.322	0.328	0.353
21	0.062	0.055	0.137	0.136	0.172	0.194	0.215	0.241	0.246	0.239	0.242	0.236	0.244	0.248
22	0.052	0.027	0.101	0.100	0.125	0.148	0.168	0.181	0.186	0.173	0.177	0.161	0.168	0.164
23	0.084	0.052	0.108	0.094	0.104	0.117	0.137	0.144	0.140	0.123	0.117	0.105	0.107	0.109
24	0.092	0.049	0.086	0.082	0.089	0.089	0.105	0.106	0.108	0.098	0.106	0.095	0.097	0.092
25	0.101	0.049	0.055	0.048	0.054	0.052	0.058	0.069	0.071	0.058	0.065	0.058	0.054	0.046
26	0.092	0.037	0.053	0.046	0.053	0.050	0.052	0.057	0.058	0.052	0.059	0.058	0.059	0.060
27	0.074	0.020	0.041	0.038	0.037	0.037	0.033	0.034	0.040	0.039	0.048	0.052	0.050	0.048

(g) July – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.004	0.025	0.063	0.091	0.111	0.130	0.106	0.062	0.052	0.084	0.092	0.101	0.092	0.074
1	0.038	0.079	0.100	0.128	0.140	0.139	0.108	0.055	0.027	0.052	0.049	0.049	0.037	0.020
2	0.274	0.318	0.322	0.308	0.280	0.245	0.181	0.137	0.101	0.108	0.086	0.055	0.053	0.041
3	0.413	0.448	0.444	0.402	0.340	0.287	0.198	0.136	0.100	0.094	0.082	0.048	0.046	0.038
4	0.531	0.562	0.543	0.495	0.409	0.336	0.244	0.172	0.125	0.104	0.089	0.054	0.053	0.037
5	0.610	0.632	0.611	0.547	0.458	0.382	0.272	0.194	0.148	0.117	0.089	0.052	0.050	0.037
6	0.658	0.674	0.642	0.564	0.479	0.408	0.300	0.215	0.168	0.137	0.105	0.058	0.052	0.033
7	0.720	0.726	0.683	0.600	0.502	0.427	0.326	0.241	0.181	0.144	0.106	0.069	0.057	0.034
8	0.763	0.745	0.696	0.608	0.523	0.442	0.333	0.246	0.186	0.140	0.108	0.071	0.058	0.040
9	0.795	0.757	0.700	0.606	0.520	0.432	0.337	0.239	0.173	0.123	0.098	0.058	0.052	0.039
10	0.812	0.755	0.701	0.603	0.513	0.428	0.330	0.242	0.177	0.117	0.106	0.065	0.059	0.048
11	0.825	0.757	0.696	0.597	0.504	0.414	0.322	0.236	0.161	0.105	0.095	0.058	0.058	0.052
12	0.851	0.771	0.710	0.609	0.513	0.412	0.328	0.244	0.168	0.107	0.097	0.054	0.059	0.050
13	0.909	0.816	0.753	0.652	0.559	0.444	0.353	0.248	0.164	0.109	0.092	0.046	0.060	0.048
14	1.000	0.905	0.819	0.723	0.633	0.521	0.416	0.297	0.210	0.140	0.114	0.071	0.074	0.056
15	0.905	1.000	0.894	0.767	0.674	0.572	0.463	0.340	0.259	0.183	0.149	0.100	0.096	0.075
16	0.819	0.894	1.000	0.846	0.703	0.593	0.481	0.357	0.300	0.229	0.189	0.125	0.104	0.079
17	0.723	0.767	0.846	1.000	0.800	0.635	0.514	0.388	0.324	0.250	0.231	0.183	0.157	0.126
18	0.633	0.674	0.703	0.800	1.000	0.754	0.552	0.429	0.368	0.306	0.284	0.241	0.221	0.175
19	0.521	0.572	0.593	0.635	0.754	1.000	0.707	0.490	0.417	0.344	0.316	0.272	0.243	0.198
20	0.416	0.463	0.481	0.514	0.552	0.707	1.000	0.732	0.533	0.416	0.370	0.312	0.281	0.245
21	0.297	0.340	0.357	0.388	0.429	0.490	0.732	1.000	0.746	0.538	0.441	0.361	0.325	0.296
22	0.210	0.259	0.300	0.324	0.368	0.417	0.533	0.746	1.000	0.742	0.565	0.448	0.369	0.319
23	0.140	0.183	0.229	0.250	0.306	0.344	0.416	0.538	0.742	1.000	0.785	0.578	0.448	0.364
24	0.114	0.149	0.189	0.231	0.284	0.316	0.370	0.441	0.565	0.785	1.000	0.793	0.613	0.491
25	0.071	0.100	0.125	0.183	0.241	0.272	0.312	0.361	0.448	0.578	0.793	1.000	0.820	0.642
26	0.074	0.096	0.104	0.157	0.221	0.243	0.281	0.325	0.369	0.448	0.613	0.820	1.000	0.840
27	0.056	0.075	0.079	0.126	0.175	0.198	0.245	0.296	0.319	0.364	0.491	0.642	0.840	1.000

TABLE V.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN ZONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(h) August

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.632	0.460	0.371	0.347	0.326	0.297	0.223	0.146	0.089	0.045	0.025	0.017	0.004
1	0.632	1.000	0.710	0.534	0.469	0.427	0.383	0.303	0.207	0.136	0.074	0.050	0.035	0.026
2	0.460	0.710	1.000	0.809	0.703	0.640	0.579	0.511	0.409	0.331	0.262	0.223	0.207	0.210
3	0.371	0.534	0.809	1.000	0.862	0.776	0.716	0.662	0.579	0.515	0.447	0.408	0.392	0.392
4	0.347	0.469	0.703	0.862	1.000	0.899	0.835	0.774	0.690	0.621	0.548	0.505	0.489	0.488
5	0.326	0.427	0.640	0.776	0.899	1.000	0.914	0.849	0.764	0.692	0.621	0.569	0.550	0.545
6	0.297	0.383	0.579	0.716	0.835	0.914	1.000	0.914	0.831	0.758	0.684	0.630	0.606	0.602
7	0.223	0.303	0.511	0.662	0.774	0.849	0.914	1.000	0.921	0.847	0.777	0.727	0.698	0.693
8	0.146	0.207	0.409	0.579	0.690	0.764	0.831	0.921	1.000	0.934	0.866	0.817	0.782	0.765
9	0.089	0.136	0.331	0.515	0.621	0.692	0.758	0.847	0.934	1.000	0.937	0.880	0.842	0.811
10	0.045	0.074	0.262	0.447	0.548	0.621	0.684	0.777	0.866	0.937	1.000	0.950	0.903	0.857
11	0.025	0.050	0.223	0.408	0.505	0.569	0.630	0.727	0.817	0.880	0.950	1.000	0.951	0.896
12	0.017	0.035	0.207	0.392	0.489	0.550	0.606	0.698	0.782	0.842	0.903	0.951	1.000	0.938
13	0.004	0.026	0.210	0.392	0.488	0.545	0.602	0.693	0.765	0.811	0.857	0.896	0.938	1.000
14	0.013	0.028	0.227	0.403	0.502	0.567	0.623	0.704	0.765	0.792	0.821	0.843	0.865	0.913
15	0.031	0.043	0.270	0.433	0.521	0.587	0.634	0.700	0.745	0.759	0.770	0.781	0.804	0.839
16	0.053	0.059	0.278	0.439	0.526	0.577	0.613	0.655	0.683	0.696	0.703	0.709	0.728	0.767
17	0.077	0.072	0.255	0.392	0.465	0.497	0.526	0.565	0.593	0.606	0.614	0.620	0.647	0.684
18	0.069	0.052	0.204	0.328	0.390	0.417	0.450	0.478	0.507	0.520	0.528	0.535	0.558	0.588
19	0.064	0.033	0.172	0.271	0.339	0.363	0.391	0.420	0.441	0.449	0.453	0.455	0.472	0.498
20	0.028	0.014	0.146	0.218	0.256	0.274	0.304	0.320	0.344	0.350	0.352	0.350	0.365	0.390
21	0.015	-0.013	0.114	0.166	0.194	0.223	0.250	0.267	0.293	0.302	0.304	0.300	0.311	0.325
22	0.040	0.017	0.115	0.159	0.164	0.185	0.213	0.230	0.252	0.257	0.256	0.253	0.263	0.283
23	0.068	0.036	0.123	0.157	0.155	0.183	0.202	0.212	0.223	0.223	0.227	0.226	0.237	0.254
24	0.062	0.014	0.075	0.111	0.107	0.137	0.143	0.149	0.156	0.168	0.172	0.176	0.190	0.205
25	0.050	-0.005	0.041	0.077	0.072	0.094	0.101	0.100	0.108	0.119	0.132	0.136	0.154	0.173
26	0.057	-0.009	0.031	0.077	0.080	0.095	0.102	0.103	0.118	0.125	0.138	0.143	0.167	0.184
27	0.056	-0.018	0.015	0.052	0.058	0.065	0.075	0.073	0.089	0.095	0.107	0.120	0.147	0.163

(h) August – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.013	0.031	0.053	0.077	0.069	0.064	0.028	0.015	0.040	0.068	0.062	0.050	0.057	0.056
1	0.028	0.043	0.059	0.072	0.052	0.033	0.014	-0.013	0.017	0.036	0.014	-0.005	-0.009	-0.018
2	0.227	0.270	0.278	0.255	0.204	0.172	0.146	0.114	0.115	0.123	0.075	0.041	0.031	0.015
3	0.403	0.433	0.439	0.392	0.328	0.271	0.218	0.166	0.159	0.157	0.111	0.077	0.077	0.052
4	0.502	0.521	0.526	0.465	0.390	0.339	0.256	0.194	0.164	0.155	0.107	0.072	0.080	0.058
5	0.567	0.587	0.577	0.497	0.417	0.363	0.274	0.223	0.185	0.183	0.137	0.094	0.095	0.065
6	0.623	0.634	0.613	0.526	0.450	0.391	0.304	0.250	0.213	0.202	0.143	0.101	0.102	0.075
7	0.704	0.700	0.655	0.565	0.478	0.420	0.320	0.267	0.230	0.212	0.149	0.100	0.103	0.073
8	0.765	0.745	0.683	0.593	0.507	0.441	0.344	0.293	0.252	0.223	0.156	0.108	0.118	0.089
9	0.792	0.759	0.696	0.606	0.520	0.449	0.350	0.302	0.257	0.223	0.168	0.119	0.125	0.095
10	0.821	0.770	0.703	0.614	0.528	0.453	0.352	0.304	0.256	0.227	0.172	0.132	0.138	0.107
11	0.843	0.781	0.709	0.620	0.535	0.455	0.350	0.300	0.253	0.226	0.176	0.136	0.143	0.120
12	0.865	0.804	0.728	0.647	0.558	0.472	0.365	0.311	0.263	0.237	0.190	0.154	0.167	0.147
13	0.913	0.839	0.767	0.684	0.588	0.498	0.390	0.325	0.283	0.254	0.205	0.173	0.184	0.163
14	1.000	0.909	0.813	0.723	0.629	0.540	0.428	0.357	0.304	0.270	0.208	0.175	0.178	0.157
15	0.909	1.000	0.889	0.772	0.687	0.599	0.499	0.425	0.369	0.330	0.252	0.204	0.202	0.171
16	0.813	0.889	1.000	0.854	0.724	0.637	0.550	0.461	0.405	0.368	0.302	0.256	0.243	0.209
17	0.723	0.772	0.854	1.000	0.822	0.670	0.578	0.495	0.449	0.413	0.341	0.297	0.275	0.231
18	0.629	0.687	0.724	0.822	1.000	0.788	0.623	0.527	0.464	0.424	0.352	0.319	0.294	0.259
19	0.540	0.599	0.637	0.670	0.788	1.000	0.765	0.594	0.512	0.463	0.392	0.364	0.343	0.309
20	0.428	0.499	0.550	0.578	0.623	0.765	1.000	0.769	0.629	0.539	0.454	0.406	0.379	0.341
21	0.357	0.425	0.461	0.495	0.527	0.594	0.769	1.000	0.795	0.637	0.522	0.447	0.400	0.365
22	0.304	0.369	0.405	0.449	0.464	0.512	0.629	0.795	1.000	0.819	0.635	0.527	0.463	0.427
23	0.270	0.330	0.368	0.413	0.424	0.463	0.539	0.637	0.819	1.000	0.810	0.643	0.540	0.463
24	0.208	0.252	0.302	0.341	0.352	0.392	0.454	0.522	0.635	0.810	1.000	0.824	0.668	0.551
25	0.175	0.204	0.256	0.297	0.319	0.364	0.406	0.447	0.527	0.643	0.824	1.000	0.853	0.688
26	0.178	0.202	0.243	0.275	0.294	0.343	0.379	0.400	0.463	0.540	0.668	0.853	1.000	0.855
27	0.157	0.171	0.209	0.231	0.259	0.309	0.341	0.365	0.427	0.463	0.551	0.688	0.855	1.000

TABLE V.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN ZONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE — Continued

(i) September

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of —													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.661	0.527	0.449	0.399	0.340	0.307	0.262	0.218	0.180	0.143	0.096	0.064	0.051
1	0.661	1.000	0.768	0.629	0.553	0.467	0.409	0.346	0.284	0.241	0.199	0.152	0.111	0.099
2	0.527	0.768	1.000	0.869	0.771	0.688	0.624	0.567	0.501	0.455	0.412	0.361	0.322	0.306
3	0.449	0.629	0.869	1.000	0.902	0.827	0.764	0.707	0.654	0.605	0.561	0.515	0.482	0.469
4	0.399	0.553	0.771	0.902	1.000	0.920	0.855	0.798	0.756	0.707	0.662	0.622	0.586	0.571
5	0.340	0.467	0.688	0.827	0.920	1.000	0.930	0.875	0.833	0.782	0.735	0.696	0.658	0.644
6	0.307	0.409	0.624	0.764	0.855	0.930	1.000	0.943	0.895	0.845	0.797	0.757	0.717	0.696
7	0.262	0.346	0.567	0.707	0.798	0.875	0.943	1.000	0.949	0.896	0.850	0.814	0.774	0.746
8	0.218	0.284	0.501	0.654	0.756	0.833	0.895	0.949	1.000	0.956	0.914	0.877	0.833	0.802
9	0.180	0.241	0.455	0.605	0.707	0.782	0.845	0.896	0.956	1.000	0.962	0.921	0.875	0.841
10	0.143	0.199	0.412	0.561	0.662	0.735	0.797	0.850	0.914	0.962	1.000	0.961	0.916	0.877
11	0.096	0.152	0.361	0.515	0.622	0.696	0.757	0.814	0.877	0.921	0.961	1.000	0.959	0.914
12	0.064	0.111	0.322	0.482	0.586	0.658	0.717	0.774	0.833	0.875	0.916	0.959	1.000	0.956
13	0.051	0.099	0.306	0.469	0.571	0.644	0.696	0.746	0.802	0.841	0.877	0.914	0.956	1.000
14	0.039	0.086	0.306	0.473	0.577	0.651	0.700	0.747	0.797	0.825	0.852	0.880	0.911	0.948
15	0.044	0.082	0.314	0.485	0.591	0.664	0.714	0.755	0.794	0.809	0.827	0.848	0.875	0.902
16	0.066	0.100	0.326	0.494	0.597	0.665	0.716	0.747	0.778	0.789	0.801	0.816	0.835	0.858
17	0.089	0.128	0.338	0.497	0.588	0.648	0.694	0.716	0.740	0.748	0.754	0.761	0.772	0.792
18	0.096	0.120	0.303	0.456	0.545	0.606	0.655	0.674	0.701	0.704	0.703	0.707	0.717	0.735
19	0.078	0.097	0.263	0.410	0.493	0.553	0.605	0.631	0.655	0.654	0.658	0.665	0.676	0.692
20	0.066	0.083	0.229	0.362	0.426	0.483	0.532	0.559	0.569	0.565	0.567	0.571	0.585	0.597
21	0.042	0.036	0.159	0.276	0.339	0.391	0.452	0.476	0.485	0.482	0.483	0.488	0.501	0.518
22	0.058	0.033	0.136	0.232	0.278	0.318	0.387	0.407	0.411	0.410	0.414	0.410	0.418	0.430
23	0.077	0.035	0.121	0.201	0.241	0.273	0.339	0.364	0.365	0.365	0.366	0.364	0.371	0.374
24	0.091	0.040	0.102	0.177	0.213	0.238	0.296	0.322	0.321	0.320	0.323	0.317	0.322	0.328
25	0.083	0.040	0.092	0.151	0.187	0.205	0.255	0.278	0.276	0.279	0.284	0.280	0.281	0.282
26	0.081	0.047	0.098	0.152	0.173	0.190	0.238	0.256	0.252	0.250	0.254	0.251	0.250	0.248
27	0.084	0.037	0.085	0.136	0.149	0.162	0.200	0.218	0.216	0.217	0.219	0.215	0.218	0.220

(i) September — Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of —													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.039	0.044	0.066	0.089	0.096	0.078	0.066	0.042	0.058	0.077	0.091	0.083	0.081	0.084
1	0.086	0.082	0.100	0.128	0.120	0.097	0.083	0.036	0.033	0.035	0.040	0.040	0.047	0.037
2	0.306	0.314	0.326	0.338	0.303	0.263	0.229	0.159	0.136	0.121	0.102	0.092	0.098	0.085
3	0.473	0.485	0.494	0.497	0.456	0.410	0.362	0.276	0.232	0.201	0.177	0.151	0.152	0.136
4	0.577	0.591	0.597	0.588	0.545	0.493	0.426	0.339	0.278	0.241	0.213	0.187	0.173	0.149
5	0.651	0.664	0.665	0.648	0.606	0.553	0.483	0.391	0.318	0.273	0.238	0.205	0.190	0.162
6	0.700	0.714	0.716	0.694	0.655	0.605	0.532	0.452	0.387	0.339	0.296	0.255	0.238	0.200
7	0.747	0.755	0.747	0.716	0.674	0.631	0.559	0.476	0.407	0.364	0.322	0.278	0.256	0.218
8	0.797	0.794	0.778	0.740	0.701	0.655	0.569	0.485	0.411	0.365	0.321	0.276	0.252	0.216
9	0.825	0.809	0.789	0.748	0.704	0.654	0.565	0.482	0.410	0.365	0.320	0.279	0.250	0.217
10	0.852	0.827	0.801	0.754	0.703	0.658	0.567	0.483	0.414	0.366	0.323	0.284	0.254	0.219
11	0.880	0.848	0.816	0.761	0.707	0.665	0.571	0.488	0.410	0.364	0.317	0.280	0.251	0.215
12	0.911	0.875	0.835	0.772	0.717	0.676	0.585	0.501	0.418	0.371	0.322	0.281	0.250	0.218
13	0.948	0.902	0.858	0.792	0.735	0.692	0.597	0.518	0.430	0.374	0.328	0.282	0.248	0.220
14	1.000	0.943	0.885	0.824	0.769	0.726	0.636	0.548	0.456	0.394	0.348	0.302	0.262	0.231
15	0.943	1.000	0.935	0.864	0.803	0.757	0.662	0.573	0.485	0.426	0.377	0.324	0.292	0.264
16	0.885	0.935	1.000	0.914	0.838	0.792	0.699	0.619	0.528	0.462	0.409	0.359	0.329	0.299
17	0.824	0.864	0.914	1.000	0.890	0.809	0.735	0.660	0.572	0.498	0.435	0.382	0.354	0.325
18	0.769	0.803	0.838	0.890	1.000	0.873	0.759	0.684	0.596	0.524	0.473	0.418	0.388	0.354
19	0.726	0.757	0.792	0.809	0.873	1.000	0.851	0.731	0.639	0.584	0.522	0.468	0.437	0.404
20	0.636	0.662	0.699	0.735	0.759	0.851	1.000	0.835	0.688	0.623	0.560	0.514	0.482	0.446
21	0.548	0.573	0.619	0.660	0.684	0.731	0.835	1.000	0.829	0.717	0.636	0.585	0.559	0.518
22	0.456	0.485	0.528	0.572	0.596	0.639	0.688	0.829	1.000	0.855	0.723	0.669	0.632	0.590
23	0.394	0.426	0.462	0.498	0.524	0.584	0.623	0.717	0.855	1.000	0.864	0.755	0.696	0.659
24	0.348	0.377	0.409	0.435	0.473	0.522	0.560	0.636	0.723	0.864	1.000	0.880	0.776	0.727
25	0.302	0.324	0.359	0.382	0.418	0.468	0.514	0.585	0.669	0.755	0.880	1.000	0.889	0.783
26	0.262	0.292	0.329	0.354	0.388	0.437	0.482	0.559	0.632	0.696	0.776	0.889	1.000	0.901
27	0.231	0.264	0.299	0.325	0.354	0.404	0.446	0.518	0.590	0.659	0.727	0.783	0.901	1.000

TABLE V.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN ZONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(j) October

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.685	0.541	0.485	0.466	0.446	0.410	0.379	0.340	0.308	0.270	0.231	0.177	0.156
1	0.685	1.000	0.825	0.724	0.679	0.641	0.589	0.547	0.503	0.461	0.425	0.388	0.331	0.299
2	0.541	0.825	1.000	0.898	0.828	0.777	0.735	0.690	0.647	0.606	0.572	0.538	0.483	0.451
3	0.485	0.724	0.898	1.000	0.925	0.870	0.823	0.778	0.735	0.694	0.658	0.623	0.571	0.540
4	0.466	0.679	0.828	0.925	1.000	0.937	0.887	0.843	0.801	0.760	0.718	0.678	0.625	0.592
5	0.446	0.641	0.777	0.870	0.937	1.000	0.947	0.902	0.856	0.810	0.761	0.712	0.657	0.617
6	0.410	0.589	0.735	0.823	0.887	0.947	1.000	0.955	0.908	0.860	0.804	0.755	0.698	0.655
7	0.379	0.547	0.690	0.778	0.843	0.902	0.955	1.000	0.958	0.909	0.847	0.792	0.733	0.683
8	0.340	0.503	0.647	0.735	0.801	0.856	0.908	0.958	1.000	0.958	0.899	0.842	0.778	0.725
9	0.308	0.461	0.606	0.694	0.760	0.810	0.860	0.909	0.958	1.000	0.954	0.898	0.836	0.773
10	0.270	0.425	0.572	0.658	0.718	0.761	0.804	0.847	0.899	0.954	1.000	0.954	0.893	0.823
11	0.231	0.388	0.538	0.623	0.678	0.712	0.755	0.792	0.842	0.898	0.954	1.000	0.943	0.866
12	0.177	0.331	0.483	0.571	0.625	0.657	0.698	0.733	0.778	0.836	0.893	0.943	1.000	0.929
13	0.156	0.299	0.451	0.540	0.592	0.617	0.655	0.683	0.725	0.773	0.823	0.866	0.929	1.000
14	0.176	0.309	0.458	0.550	0.606	0.632	0.666	0.689	0.721	0.755	0.792	0.823	0.867	0.926
15	0.184	0.317	0.462	0.557	0.613	0.643	0.673	0.688	0.710	0.735	0.757	0.779	0.812	0.860
16	0.184	0.311	0.440	0.536	0.596	0.616	0.639	0.652	0.671	0.687	0.707	0.727	0.753	0.800
17	0.184	0.292	0.408	0.499	0.550	0.573	0.590	0.602	0.611	0.622	0.632	0.650	0.667	0.710
18	0.185	0.276	0.386	0.468	0.515	0.535	0.557	0.564	0.566	0.578	0.583	0.594	0.601	0.637
19	0.182	0.234	0.325	0.402	0.453	0.474	0.498	0.508	0.514	0.519	0.519	0.523	0.520	0.547
20	0.178	0.217	0.291	0.346	0.395	0.414	0.432	0.445	0.443	0.446	0.448	0.450	0.439	0.464
21	0.159	0.197	0.240	0.286	0.328	0.347	0.364	0.371	0.370	0.374	0.385	0.391	0.389	0.411
22	0.163	0.210	0.233	0.264	0.298	0.317	0.331	0.339	0.333	0.338	0.347	0.349	0.341	0.348
23	0.154	0.186	0.205	0.226	0.254	0.265	0.275	0.282	0.276	0.284	0.301	0.304	0.290	0.293
24	0.124	0.143	0.153	0.157	0.179	0.187	0.200	0.205	0.197	0.206	0.231	0.238	0.221	0.220
25	0.106	0.127	0.119	0.113	0.129	0.135	0.147	0.152	0.146	0.154	0.182	0.192	0.175	0.172
26	0.111	0.119	0.103	0.093	0.113	0.118	0.122	0.126	0.121	0.133	0.166	0.181	0.172	0.163
27	0.109	0.114	0.088	0.078	0.100	0.106	0.108	0.115	0.115	0.126	0.154	0.165	0.154	0.140

(j) October – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.176	0.184	0.184	0.184	0.185	0.182	0.178	0.159	0.163	0.154	0.124	0.106	0.111	0.109
1	0.309	0.317	0.311	0.292	0.276	0.234	0.217	0.197	0.210	0.186	0.143	0.127	0.119	0.114
2	0.458	0.462	0.440	0.408	0.386	0.325	0.291	0.240	0.233	0.205	0.153	0.119	0.103	0.088
3	0.550	0.557	0.536	0.499	0.468	0.402	0.346	0.286	0.264	0.226	0.157	0.113	0.093	0.078
4	0.606	0.613	0.596	0.550	0.515	0.453	0.395	0.328	0.298	0.254	0.179	0.129	0.113	0.100
5	0.632	0.643	0.616	0.573	0.535	0.474	0.414	0.347	0.317	0.265	0.187	0.135	0.118	0.106
6	0.666	0.673	0.639	0.590	0.557	0.498	0.432	0.364	0.331	0.275	0.200	0.147	0.122	0.108
7	0.689	0.688	0.652	0.602	0.564	0.508	0.445	0.371	0.339	0.282	0.205	0.152	0.126	0.115
8	0.721	0.710	0.671	0.611	0.566	0.514	0.443	0.370	0.333	0.276	0.197	0.146	0.121	0.115
9	0.755	0.735	0.687	0.622	0.578	0.519	0.446	0.374	0.338	0.284	0.206	0.154	0.133	0.126
10	0.792	0.757	0.707	0.632	0.583	0.519	0.448	0.385	0.347	0.301	0.231	0.182	0.166	0.154
11	0.823	0.779	0.727	0.650	0.594	0.523	0.450	0.391	0.349	0.304	0.238	0.192	0.181	0.165
12	0.867	0.812	0.753	0.667	0.601	0.520	0.439	0.389	0.341	0.290	0.221	0.175	0.172	0.154
13	0.926	0.860	0.800	0.710	0.637	0.547	0.464	0.411	0.348	0.293	0.220	0.172	0.163	0.140
14	1.000	0.926	0.857	0.767	0.686	0.604	0.509	0.439	0.359	0.302	0.222	0.169	0.155	0.128
15	0.926	1.000	0.921	0.821	0.747	0.655	0.552	0.476	0.402	0.333	0.246	0.201	0.182	0.149
16	0.857	0.921	1.000	0.894	0.795	0.698	0.600	0.528	0.455	0.382	0.286	0.239	0.213	0.176
17	0.767	0.821	0.894	1.000	0.878	0.745	0.650	0.586	0.514	0.432	0.342	0.295	0.263	0.223
18	0.686	0.747	0.795	0.878	1.000	0.842	0.723	0.643	0.567	0.483	0.397	0.348	0.312	0.272
19	0.604	0.655	0.698	0.745	0.842	1.000	0.858	0.736	0.640	0.563	0.485	0.426	0.379	0.330
20	0.509	0.552	0.600	0.650	0.723	0.858	1.000	0.849	0.729	0.658	0.588	0.525	0.465	0.416
21	0.439	0.476	0.528	0.586	0.643	0.736	0.849	1.000	0.863	0.756	0.687	0.622	0.570	0.514
22	0.359	0.402	0.455	0.514	0.567	0.640	0.729	0.863	1.000	0.888	0.780	0.713	0.657	0.601
23	0.302	0.333	0.382	0.432	0.483	0.563	0.658	0.756	0.888	1.000	0.901	0.803	0.739	0.683
24	0.222	0.246	0.286	0.342	0.397	0.485	0.588	0.687	0.780	0.901	1.000	0.910	0.824	0.765
25	0.169	0.201	0.239	0.295	0.348	0.426	0.525	0.622	0.713	0.803	0.910	1.000	0.921	0.846
26	0.155	0.182	0.213	0.263	0.312	0.379	0.465	0.570	0.657	0.739	0.824	0.921	1.000	0.937
27	0.128	0.149	0.176	0.223	0.272	0.330	0.416	0.514	0.601	0.683	0.765	0.846	0.937	1.000

TABLE V.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN ZONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(k) November

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.603	0.450	0.414	0.392	0.385	0.353	0.325	0.293	0.264	0.240	0.208	0.168	0.136
1	0.603	1.000	0.790	0.670	0.615	0.583	0.549	0.514	0.476	0.457	0.440	0.421	0.395	0.369
2	0.450	0.790	1.000	0.878	0.808	0.762	0.725	0.695	0.654	0.633	0.609	0.583	0.559	0.536
3	0.414	0.670	0.878	1.000	0.924	0.873	0.840	0.807	0.772	0.738	0.705	0.669	0.640	0.623
4	0.392	0.615	0.808	0.924	1.000	0.940	0.900	0.864	0.826	0.789	0.748	0.706	0.675	0.661
5	0.385	0.583	0.762	0.873	0.940	1.000	0.949	0.906	0.868	0.829	0.782	0.735	0.697	0.677
6	0.353	0.549	0.725	0.840	0.900	0.949	1.000	0.951	0.910	0.868	0.819	0.768	0.721	0.696
7	0.325	0.514	0.695	0.807	0.864	0.906	0.951	1.000	0.957	0.913	0.859	0.803	0.751	0.725
8	0.293	0.476	0.654	0.772	0.826	0.868	0.910	0.957	1.000	0.956	0.901	0.841	0.781	0.748
9	0.264	0.457	0.633	0.738	0.789	0.829	0.868	0.913	0.956	1.000	0.949	0.892	0.827	0.779
10	0.240	0.440	0.609	0.705	0.748	0.782	0.819	0.859	0.901	0.949	1.000	0.949	0.878	0.812
11	0.208	0.421	0.583	0.669	0.706	0.735	0.768	0.803	0.841	0.892	0.949	1.000	0.932	0.857
12	0.168	0.395	0.559	0.640	0.675	0.697	0.721	0.751	0.781	0.827	0.878	0.932	1.000	0.919
13	0.136	0.369	0.536	0.623	0.661	0.677	0.696	0.725	0.748	0.779	0.812	0.857	0.919	1.000
14	0.140	0.364	0.533	0.622	0.657	0.672	0.689	0.710	0.723	0.743	0.769	0.799	0.842	0.903
15	0.131	0.360	0.529	0.610	0.641	0.652	0.666	0.676	0.686	0.697	0.723	0.749	0.789	0.832
16	0.127	0.349	0.506	0.575	0.610	0.619	0.634	0.640	0.644	0.649	0.668	0.687	0.723	0.769
17	0.101	0.308	0.449	0.500	0.528	0.532	0.547	0.554	0.550	0.553	0.568	0.587	0.620	0.671
18	0.062	0.233	0.372	0.412	0.431	0.437	0.452	0.449	0.448	0.447	0.469	0.485	0.511	0.563
19	0.059	0.174	0.290	0.321	0.339	0.345	0.351	0.344	0.330	0.327	0.344	0.359	0.386	0.436
20	0.051	0.141	0.232	0.253	0.269	0.275	0.288	0.286	0.271	0.268	0.277	0.291	0.307	0.349
21	0.038	0.109	0.186	0.192	0.208	0.212	0.225	0.232	0.224	0.218	0.221	0.234	0.247	0.288
22	0.048	0.119	0.175	0.168	0.188	0.188	0.202	0.208	0.199	0.185	0.183	0.195	0.208	0.238
23	0.028	0.111	0.143	0.131	0.146	0.148	0.163	0.168	0.163	0.146	0.144	0.157	0.170	0.201
24	0.024	0.105	0.120	0.098	0.103	0.102	0.111	0.116	0.118	0.108	0.107	0.125	0.140	0.166
25	0.005	0.098	0.104	0.078	0.079	0.072	0.076	0.085	0.088	0.084	0.090	0.113	0.132	0.154
26	−0.007	0.086	0.089	0.062	0.058	0.049	0.057	0.065	0.072	0.066	0.079	0.104	0.125	0.148
27	0.008	0.094	0.097	0.067	0.059	0.052	0.060	0.067	0.075	0.071	0.089	0.116	0.138	0.158

(k) November – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.140	0.131	0.127	0.101	0.062	0.059	0.051	0.038	0.048	0.028	0.024	0.005	−0.007	0.008
1	0.364	0.360	0.349	0.308	0.233	0.174	0.141	0.109	0.119	0.111	0.105	0.098	0.086	0.094
2	0.533	0.529	0.506	0.449	0.372	0.290	0.232	0.186	0.175	0.143	0.120	0.104	0.089	0.097
3	0.622	0.610	0.575	0.500	0.412	0.321	0.253	0.192	0.168	0.131	0.098	0.078	0.062	0.067
4	0.657	0.641	0.610	0.528	0.431	0.339	0.269	0.208	0.188	0.146	0.103	0.079	0.058	0.059
5	0.672	0.652	0.619	0.532	0.437	0.345	0.275	0.212	0.188	0.148	0.102	0.072	0.049	0.052
6	0.689	0.666	0.634	0.547	0.452	0.351	0.288	0.225	0.202	0.163	0.111	0.076	0.057	0.060
7	0.710	0.676	0.640	0.554	0.449	0.344	0.286	0.232	0.208	0.168	0.116	0.085	0.065	0.067
8	0.723	0.686	0.644	0.550	0.448	0.330	0.271	0.224	0.199	0.163	0.118	0.088	0.072	0.075
9	0.743	0.697	0.649	0.553	0.447	0.327	0.268	0.218	0.185	0.146	0.108	0.084	0.066	0.071
10	0.769	0.723	0.668	0.568	0.469	0.344	0.277	0.221	0.183	0.144	0.107	0.090	0.079	0.089
11	0.799	0.749	0.687	0.587	0.485	0.359	0.291	0.234	0.195	0.157	0.125	0.113	0.104	0.116
12	0.842	0.789	0.723	0.620	0.511	0.386	0.307	0.247	0.208	0.170	0.140	0.132	0.125	0.138
13	0.903	0.832	0.769	0.671	0.563	0.436	0.349	0.288	0.238	0.201	0.166	0.154	0.148	0.158
14	1.000	0.908	0.822	0.735	0.629	0.513	0.419	0.341	0.283	0.232	0.185	0.170	0.163	0.163
15	0.908	1.000	0.905	0.783	0.688	0.574	0.476	0.387	0.323	0.266	0.211	0.188	0.177	0.180
16	0.822	0.905	1.000	0.871	0.736	0.627	0.517	0.424	0.358	0.292	0.238	0.221	0.211	0.211
17	0.735	0.783	0.871	1.000	0.849	0.710	0.603	0.526	0.453	0.385	0.330	0.311	0.291	0.282
18	0.629	0.688	0.736	0.849	1.000	0.835	0.672	0.606	0.519	0.459	0.399	0.366	0.343	0.329
19	0.513	0.574	0.627	0.710	0.835	1.000	0.813	0.688	0.593	0.526	0.478	0.428	0.398	0.381
20	0.419	0.476	0.517	0.603	0.672	0.813	1.000	0.843	0.711	0.636	0.586	0.536	0.504	0.486
21	0.341	0.387	0.424	0.526	0.606	0.688	0.843	1.000	0.864	0.758	0.697	0.646	0.606	0.580
22	0.283	0.323	0.358	0.453	0.519	0.593	0.711	0.864	1.000	0.897	0.806	0.748	0.704	0.668
23	0.232	0.266	0.292	0.385	0.459	0.526	0.636	0.758	0.897	1.000	0.910	0.826	0.780	0.739
24	0.185	0.211	0.238	0.330	0.399	0.478	0.586	0.697	0.806	0.910	1.000	0.926	0.860	0.812
25	0.170	0.188	0.221	0.311	0.366	0.428	0.536	0.646	0.748	0.826	0.926	1.000	0.944	0.885
26	0.163	0.177	0.211	0.291	0.343	0.398	0.504	0.606	0.704	0.780	0.860	0.944	1.000	0.952
27	0.163	0.180	0.211	0.282	0.329	0.381	0.486	0.580	0.668	0.739	0.812	0.885	0.952	1.000

TABLE V.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN ZONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(l) December

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.554	0.358	0.297	0.275	0.253	0.233	0.200	0.179	0.134	0.090	0.050	0.014	-0.004
1	0.554	1.000	0.735	0.549	0.462	0.413	0.363	0.324	0.286	0.255	0.213	0.181	0.146	0.121
2	0.358	0.735	1.000	0.825	0.718	0.657	0.605	0.565	0.530	0.502	0.465	0.427	0.398	0.364
3	0.297	0.549	0.825	1.000	0.895	0.821	0.768	0.732	0.704	0.675	0.640	0.601	0.561	0.518
4	0.275	0.462	0.718	0.895	1.000	0.919	0.865	0.823	0.790	0.757	0.718	0.671	0.621	0.580
5	0.253	0.413	0.657	0.821	0.919	1.000	0.943	0.901	0.860	0.821	0.770	0.713	0.660	0.612
6	0.233	0.363	0.605	0.768	0.865	0.943	1.000	0.953	0.911	0.866	0.809	0.749	0.692	0.639
7	0.200	0.324	0.565	0.732	0.823	0.901	0.953	1.000	0.958	0.912	0.852	0.783	0.720	0.661
8	0.179	0.286	0.530	0.704	0.790	0.860	0.911	0.958	1.000	0.955	0.896	0.825	0.755	0.685
9	0.134	0.255	0.502	0.675	0.757	0.821	0.866	0.912	0.955	1.000	0.944	0.876	0.800	0.722
10	0.090	0.213	0.465	0.640	0.718	0.770	0.809	0.852	0.896	0.944	1.000	0.938	0.857	0.775
11	0.050	0.181	0.427	0.601	0.671	0.713	0.749	0.783	0.825	0.876	0.938	1.000	0.923	0.834
12	0.014	0.146	0.398	0.561	0.621	0.660	0.692	0.720	0.755	0.800	0.857	0.923	1.000	0.913
13	-0.004	0.121	0.364	0.518	0.580	0.612	0.639	0.661	0.685	0.722	0.775	0.834	0.913	1.000
14	0.013	0.109	0.329	0.481	0.541	0.569	0.595	0.617	0.636	0.668	0.711	0.764	0.829	0.912
15	0.026	0.113	0.310	0.452	0.506	0.529	0.550	0.569	0.592	0.618	0.653	0.699	0.760	0.830
16	0.012	0.097	0.282	0.411	0.459	0.479	0.493	0.509	0.531	0.550	0.583	0.629	0.690	0.754
17	0.015	0.090	0.267	0.382	0.422	0.441	0.455	0.469	0.481	0.493	0.522	0.560	0.621	0.679
18	0.030	0.104	0.252	0.355	0.385	0.402	0.410	0.426	0.430	0.439	0.466	0.506	0.568	0.619
19	0.034	0.092	0.233	0.329	0.348	0.355	0.355	0.370	0.371	0.377	0.402	0.430	0.488	0.544
20	0.041	0.098	0.240	0.321	0.327	0.323	0.321	0.331	0.326	0.329	0.348	0.361	0.404	0.462
21	0.044	0.106	0.231	0.294	0.296	0.287	0.287	0.297	0.292	0.293	0.311	0.322	0.347	0.393
22	0.051	0.107	0.202	0.257	0.258	0.252	0.254	0.266	0.260	0.259	0.272	0.279	0.293	0.317
23	0.067	0.124	0.204	0.252	0.254	0.256	0.259	0.267	0.254	0.257	0.264	0.261	0.264	0.279
24	0.061	0.123	0.201	0.246	0.252	0.260	0.263	0.273	0.259	0.263	0.267	0.267	0.274	0.292
25	0.055	0.122	0.205	0.238	0.243	0.251	0.251	0.265	0.252	0.257	0.267	0.270	0.289	0.306
26	0.050	0.103	0.190	0.225	0.225	0.235	0.233	0.248	0.238	0.246	0.259	0.265	0.289	0.308
27	0.054	0.100	0.181	0.213	0.212	0.221	0.221	0.238	0.230	0.239	0.255	0.261	0.280	0.303

(l) December – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.013	0.026	0.012	0.015	0.030	0.034	0.041	0.044	0.051	0.067	0.061	0.055	0.050	0.054
1	0.109	0.113	0.097	0.090	0.104	0.092	0.098	0.106	0.107	0.124	0.123	0.122	0.103	0.100
2	0.329	0.310	0.282	0.267	0.252	0.233	0.240	0.231	0.202	0.204	0.201	0.205	0.190	0.181
3	0.481	0.452	0.411	0.382	0.355	0.329	0.321	0.294	0.257	0.252	0.246	0.238	0.223	0.213
4	0.541	0.506	0.459	0.422	0.385	0.348	0.327	0.296	0.258	0.254	0.252	0.243	0.225	0.212
5	0.569	0.529	0.479	0.441	0.402	0.355	0.323	0.287	0.252	0.256	0.260	0.251	0.235	0.221
6	0.595	0.550	0.493	0.455	0.410	0.355	0.321	0.287	0.254	0.259	0.263	0.251	0.233	0.221
7	0.617	0.569	0.509	0.469	0.426	0.370	0.331	0.297	0.266	0.267	0.273	0.265	0.248	0.238
8	0.636	0.592	0.531	0.481	0.430	0.371	0.326	0.292	0.260	0.254	0.259	0.252	0.238	0.230
9	0.668	0.618	0.550	0.493	0.439	0.377	0.329	0.293	0.259	0.257	0.263	0.257	0.246	0.239
10	0.711	0.653	0.583	0.522	0.466	0.402	0.348	0.311	0.272	0.264	0.267	0.267	0.259	0.255
11	0.764	0.699	0.629	0.560	0.506	0.430	0.361	0.322	0.279	0.261	0.267	0.270	0.265	0.261
12	0.829	0.760	0.690	0.621	0.568	0.488	0.404	0.347	0.293	0.264	0.274	0.289	0.289	0.280
13	0.912	0.830	0.754	0.679	0.619	0.544	0.462	0.393	0.317	0.279	0.292	0.306	0.308	0.303
14	1.000	0.913	0.816	0.735	0.662	0.588	0.505	0.426	0.349	0.308	0.324	0.332	0.329	0.323
15	0.913	1.000	0.909	0.798	0.719	0.638	0.557	0.483	0.404	0.358	0.368	0.370	0.362	0.353
16	0.816	0.909	1.000	0.898	0.780	0.694	0.610	0.535	0.464	0.412	0.416	0.412	0.404	0.392
17	0.735	0.798	0.898	1.000	0.886	0.756	0.654	0.584	0.518	0.470	0.470	0.461	0.442	0.424
18	0.662	0.719	0.780	0.886	1.000	0.865	0.702	0.635	0.583	0.539	0.533	0.519	0.491	0.470
19	0.588	0.638	0.694	0.756	0.865	1.000	0.851	0.733	0.679	0.625	0.618	0.599	0.566	0.537
20	0.505	0.557	0.610	0.654	0.702	0.851	1.000	0.876	0.770	0.708	0.694	0.666	0.634	0.603
21	0.426	0.483	0.535	0.584	0.635	0.733	0.876	1.000	0.898	0.798	0.769	0.731	0.698	0.662
22	0.349	0.404	0.464	0.518	0.583	0.679	0.770	0.898	1.000	0.907	0.833	0.779	0.738	0.701
23	0.308	0.358	0.412	0.470	0.539	0.625	0.708	0.798	0.907	1.000	0.925	0.847	0.790	0.747
24	0.324	0.368	0.416	0.470	0.533	0.618	0.694	0.769	0.833	0.925	1.000	0.941	0.875	0.817
25	0.332	0.370	0.412	0.461	0.519	0.599	0.666	0.731	0.779	0.847	0.941	1.000	0.952	0.884
26	0.329	0.362	0.404	0.442	0.491	0.566	0.634	0.698	0.738	0.790	0.875	0.952	1.000	0.958
27	0.323	0.353	0.392	0.424	0.470	0.537	0.603	0.662	0.701	0.747	0.817	0.884	0.958	1.000

TABLE V.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN ZONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE — Concluded

(m) Annual

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of —													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.608	0.416	0.345	0.312	0.286	0.257	0.222	0.183	0.144	0.102	0.062	0.026	0.009
1	0.608	1.000	0.742	0.581	0.508	0.457	0.412	0.364	0.313	0.267	0.223	0.189	0.160	0.146
2	0.416	0.742	1.000	0.844	0.745	0.682	0.629	0.579	0.525	0.476	0.431	0.391	0.364	0.352
3	0.345	0.581	0.844	1.000	0.896	0.823	0.768	0.721	0.673	0.624	0.578	0.536	0.505	0.488
4	0.312	0.508	0.745	0.896	1.000	0.920	0.861	0.811	0.763	0.713	0.664	0.617	0.580	0.559
5	0.286	0.457	0.682	0.823	0.920	1.000	0.934	0.883	0.832	0.780	0.726	0.674	0.632	0.607
6	0.257	0.412	0.629	0.768	0.861	0.934	1.000	0.943	0.891	0.837	0.780	0.723	0.676	0.646
7	0.222	0.364	0.579	0.721	0.811	0.883	0.943	1.000	0.949	0.896	0.837	0.777	0.724	0.686
8	0.183	0.313	0.525	0.673	0.763	0.832	0.891	0.949	1.000	0.951	0.893	0.832	0.771	0.726
9	0.144	0.267	0.476	0.624	0.713	0.780	0.837	0.896	0.951	1.000	0.949	0.887	0.822	0.766
10	0.102	0.223	0.431	0.578	0.664	0.726	0.780	0.837	0.893	0.949	1.000	0.946	0.876	0.810
11	0.062	0.189	0.391	0.536	0.617	0.674	0.723	0.777	0.832	0.887	0.946	1.000	0.936	0.860
12	0.026	0.160	0.364	0.505	0.580	0.632	0.676	0.724	0.771	0.822	0.876	0.936	1.000	0.923
13	0.009	0.146	0.352	0.488	0.559	0.607	0.646	0.686	0.726	0.766	0.810	0.860	0.923	1.000
14	0.014	0.143	0.346	0.480	0.551	0.598	0.635	0.670	0.702	0.731	0.763	0.800	0.845	0.911
15	0.022	0.144	0.344	0.472	0.541	0.585	0.618	0.646	0.670	0.691	0.715	0.744	0.784	0.833
16	0.029	0.138	0.327	0.447	0.514	0.552	0.581	0.602	0.620	0.636	0.656	0.681	0.719	0.766
17	0.029	0.122	0.294	0.402	0.463	0.497	0.522	0.542	0.555	0.567	0.583	0.604	0.641	0.685
18	0.021	0.097	0.249	0.345	0.399	0.432	0.457	0.471	0.483	0.493	0.507	0.526	0.558	0.601
19	0.022	0.074	0.205	0.290	0.336	0.364	0.386	0.401	0.409	0.415	0.428	0.442	0.468	0.507
20	0.024	0.061	0.170	0.240	0.277	0.300	0.319	0.331	0.336	0.339	0.348	0.358	0.381	0.416
21	0.022	0.045	0.135	0.189	0.220	0.239	0.258	0.269	0.270	0.270	0.279	0.285	0.306	0.337
22	0.030	0.045	0.117	0.157	0.180	0.196	0.213	0.221	0.219	0.216	0.222	0.224	0.241	0.267
23	0.038	0.041	0.097	0.127	0.144	0.157	0.172	0.178	0.172	0.170	0.177	0.179	0.195	0.218
24	0.036	0.034	0.075	0.099	0.111	0.120	0.132	0.137	0.131	0.131	0.140	0.144	0.159	0.181
25	0.032	0.028	0.059	0.077	0.088	0.094	0.104	0.112	0.107	0.109	0.119	0.124	0.139	0.159
26	0.030	0.022	0.049	0.065	0.075	0.080	0.089	0.097	0.095	0.098	0.110	0.116	0.132	0.151
27	0.030	0.021	0.044	0.056	0.064	0.067	0.074	0.081	0.082	0.085	0.096	0.104	0.120	0.140

(m) Annual — Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of —													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.014	0.022	0.029	0.029	0.021	0.022	0.024	0.022	0.030	0.038	0.036	0.032	0.030	0.030
1	0.143	0.144	0.138	0.122	0.097	0.074	0.061	0.045	0.045	0.041	0.034	0.028	0.022	0.021
2	0.346	0.344	0.327	0.294	0.249	0.205	0.170	0.135	0.117	0.097	0.075	0.059	0.049	0.044
3	0.480	0.472	0.447	0.402	0.345	0.290	0.240	0.189	0.157	0.127	0.099	0.077	0.065	0.056
4	0.551	0.541	0.514	0.463	0.399	0.336	0.277	0.220	0.180	0.144	0.111	0.088	0.075	0.064
5	0.598	0.585	0.552	0.497	0.432	0.364	0.300	0.239	0.196	0.157	0.120	0.094	0.080	0.067
6	0.635	0.618	0.581	0.522	0.457	0.386	0.319	0.258	0.213	0.172	0.132	0.104	0.089	0.074
7	0.670	0.646	0.602	0.542	0.471	0.401	0.331	0.269	0.221	0.178	0.137	0.112	0.097	0.081
8	0.702	0.670	0.620	0.555	0.483	0.409	0.336	0.270	0.219	0.172	0.131	0.107	0.095	0.082
9	0.731	0.691	0.636	0.567	0.493	0.415	0.339	0.270	0.216	0.170	0.131	0.109	0.098	0.085
10	0.763	0.715	0.656	0.583	0.507	0.428	0.348	0.279	0.222	0.177	0.140	0.119	0.110	0.096
11	0.800	0.744	0.681	0.604	0.526	0.442	0.358	0.285	0.224	0.179	0.144	0.124	0.116	0.104
12	0.845	0.784	0.719	0.641	0.558	0.468	0.381	0.306	0.241	0.195	0.159	0.139	0.132	0.120
13	0.911	0.833	0.766	0.685	0.601	0.507	0.416	0.337	0.267	0.218	0.181	0.159	0.151	0.140
14	1.000	0.909	0.816	0.735	0.653	0.559	0.462	0.375	0.298	0.242	0.201	0.177	0.163	0.149
15	0.909	1.000	0.899	0.785	0.704	0.610	0.511	0.422	0.343	0.283	0.236	0.207	0.191	0.173
16	0.816	0.899	1.000	0.875	0.751	0.658	0.559	0.472	0.395	0.334	0.284	0.251	0.231	0.210
17	0.735	0.785	0.875	1.000	0.852	0.711	0.612	0.529	0.455	0.389	0.336	0.302	0.278	0.250
18	0.653	0.704	0.751	0.852	1.000	0.827	0.675	0.592	0.519	0.453	0.399	0.362	0.336	0.302
19	0.559	0.610	0.658	0.711	0.827	1.000	0.815	0.674	0.591	0.526	0.475	0.432	0.400	0.363
20	0.462	0.511	0.559	0.612	0.675	0.815	1.000	0.819	0.684	0.609	0.556	0.507	0.471	0.432
21	0.375	0.422	0.472	0.529	0.592	0.674	0.819	1.000	0.837	0.709	0.638	0.581	0.543	0.501
22	0.298	0.343	0.395	0.455	0.519	0.591	0.684	0.837	1.000	0.857	0.738	0.665	0.615	0.570
23	0.242	0.283	0.334	0.389	0.453	0.526	0.609	0.709	0.857	1.000	0.877	0.764	0.696	0.641
24	0.201	0.236	0.284	0.336	0.399	0.475	0.556	0.638	0.738	0.877	1.000	0.891	0.793	0.724
25	0.177	0.207	0.251	0.302	0.362	0.432	0.507	0.581	0.665	0.764	0.891	1.000	0.910	0.816
26	0.163	0.191	0.231	0.278	0.336	0.400	0.471	0.543	0.615	0.696	0.793	0.910	1.000	0.921
27	0.149	0.173	0.210	0.250	0.302	0.363	0.432	0.501	0.570	0.641	0.724	0.816	0.921	1.000

TABLE VI.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN MERIDIONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE

[Sample includes observations made 4 times daily for years 1956 to 1964 at Norfolk and Washington stations]

(a) January

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.655	0.438	0.345	0.268	0.211	0.166	0.125	0.087	0.050	0.034	0.006	-0.007	-0.020
1	0.655	1.000	0.796	0.675	0.572	0.493	0.428	0.376	0.340	0.300	0.276	0.244	0.222	0.198
2	0.438	0.796	1.000	0.890	0.795	0.728	0.665	0.615	0.581	0.542	0.512	0.475	0.453	0.424
3	0.345	0.675	0.890	1.000	0.916	0.850	0.797	0.754	0.717	0.679	0.648	0.606	0.576	0.538
4	0.268	0.572	0.795	0.916	1.000	0.940	0.890	0.849	0.809	0.768	0.730	0.684	0.655	0.622
5	0.211	0.493	0.728	0.850	0.940	1.000	0.953	0.909	0.870	0.829	0.787	0.738	0.701	0.661
6	0.166	0.428	0.665	0.797	0.890	0.953	1.000	0.960	0.919	0.874	0.827	0.772	0.732	0.693
7	0.125	0.376	0.615	0.754	0.849	0.909	0.960	1.000	0.961	0.917	0.865	0.806	0.762	0.718
8	0.087	0.340	0.581	0.717	0.809	0.870	0.919	0.961	1.000	0.962	0.911	0.851	0.807	0.754
9	0.050	0.300	0.542	0.679	0.768	0.829	0.874	0.917	0.962	1.000	0.958	0.903	0.853	0.793
10	0.034	0.276	0.512	0.648	0.730	0.787	0.827	0.865	0.911	0.958	1.000	0.951	0.898	0.833
11	0.006	0.244	0.475	0.606	0.684	0.738	0.772	0.806	0.851	0.903	0.951	1.000	0.944	0.874
12	-0.007	0.222	0.453	0.576	0.655	0.701	0.732	0.762	0.807	0.853	0.898	0.944	1.000	0.926
13	-0.020	0.198	0.424	0.538	0.622	0.661	0.693	0.718	0.754	0.793	0.833	0.874	0.926	1.000
14	-0.014	0.192	0.400	0.511	0.587	0.626	0.655	0.677	0.710	0.744	0.777	0.811	0.862	0.918
15	-0.003	0.196	0.385	0.492	0.571	0.603	0.625	0.643	0.676	0.702	0.735	0.764	0.819	0.865
16	-0.000	0.181	0.359	0.464	0.533	0.571	0.595	0.613	0.646	0.667	0.696	0.721	0.770	0.810
17	0.009	0.180	0.338	0.437	0.499	0.526	0.545	0.564	0.595	0.612	0.638	0.664	0.705	0.750
18	0.015	0.158	0.274	0.372	0.431	0.447	0.468	0.486	0.515	0.527	0.554	0.580	0.616	0.657
19	0.013	0.142	0.233	0.315	0.364	0.378	0.392	0.404	0.424	0.429	0.449	0.473	0.509	0.547
20	0.009	0.102	0.179	0.248	0.288	0.299	0.311	0.322	0.335	0.336	0.350	0.365	0.394	0.420
21	-0.019	0.062	0.125	0.188	0.217	0.225	0.238	0.237	0.245	0.246	0.254	0.261	0.278	0.305
22	-0.017	0.057	0.099	0.143	0.159	0.162	0.172	0.168	0.173	0.164	0.165	0.172	0.181	0.198
23	-0.012	0.050	0.073	0.113	0.119	0.122	0.127	0.122	0.127	0.115	0.110	0.113	0.111	0.126
24	-0.000	0.056	0.073	0.106	0.108	0.111	0.112	0.106	0.109	0.093	0.084	0.089	0.083	0.095
25	0.006	0.055	0.066	0.090	0.092	0.098	0.099	0.093	0.093	0.078	0.068	0.067	0.062	0.073
26	0.010	0.059	0.061	0.083	0.083	0.085	0.084	0.075	0.076	0.061	0.052	0.052	0.041	0.047
27	0.018	0.065	0.063	0.083	0.085	0.086	0.083	0.075	0.071	0.056	0.050	0.051	0.038	0.039

(a) January – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.014	-0.003	-0.000	0.009	0.015	0.013	0.009	-0.019	-0.017	-0.012	-0.000	0.006	0.010	0.018
1	0.192	0.196	0.181	0.180	0.158	0.142	0.102	0.062	0.057	0.050	0.056	0.055	0.059	0.065
2	0.400	0.385	0.359	0.338	0.274	0.233	0.179	0.125	0.099	0.073	0.073	0.066	0.061	0.063
3	0.511	0.492	0.464	0.437	0.372	0.315	0.248	0.188	0.143	0.113	0.106	0.090	0.083	0.083
4	0.587	0.571	0.533	0.499	0.431	0.364	0.288	0.217	0.159	0.119	0.108	0.092	0.083	0.085
5	0.626	0.603	0.571	0.526	0.447	0.378	0.299	0.225	0.162	0.122	0.111	0.098	0.085	0.086
6	0.655	0.625	0.595	0.545	0.468	0.392	0.311	0.238	0.172	0.127	0.112	0.099	0.084	0.083
7	0.677	0.643	0.613	0.564	0.486	0.404	0.322	0.237	0.168	0.122	0.106	0.093	0.075	0.075
8	0.710	0.676	0.646	0.595	0.515	0.424	0.335	0.245	0.173	0.127	0.109	0.093	0.076	0.071
9	0.744	0.702	0.667	0.612	0.527	0.429	0.336	0.246	0.164	0.115	0.093	0.078	0.061	0.056
10	0.777	0.735	0.696	0.638	0.554	0.449	0.350	0.254	0.165	0.110	0.084	0.068	0.052	0.050
11	0.811	0.764	0.721	0.664	0.580	0.473	0.365	0.261	0.172	0.113	0.089	0.067	0.052	0.051
12	0.862	0.819	0.770	0.705	0.616	0.509	0.394	0.278	0.181	0.111	0.083	0.062	0.041	0.038
13	0.918	0.865	0.810	0.750	0.657	0.547	0.420	0.305	0.198	0.126	0.095	0.073	0.047	0.039
14	1.000	0.915	0.849	0.793	0.709	0.599	0.476	0.353	0.234	0.161	0.125	0.097	0.073	0.068
15	0.915	1.000	0.909	0.828	0.749	0.650	0.530	0.400	0.281	0.205	0.163	0.135	0.114	0.108
16	0.849	0.909	1.000	0.889	0.779	0.681	0.572	0.450	0.323	0.247	0.198	0.172	0.156	0.154
17	0.793	0.828	0.889	1.000	0.867	0.739	0.633	0.515	0.393	0.316	0.265	0.226	0.211	0.209
18	0.709	0.749	0.779	0.867	1.000	0.857	0.714	0.619	0.505	0.417	0.365	0.312	0.289	0.289
19	0.599	0.650	0.681	0.739	0.857	1.000	0.839	0.708	0.605	0.512	0.472	0.424	0.403	0.383
20	0.476	0.530	0.572	0.633	0.714	0.839	1.000	0.838	0.718	0.643	0.602	0.557	0.524	0.494
21	0.353	0.400	0.450	0.515	0.619	0.708	0.838	1.000	0.867	0.770	0.728	0.674	0.636	0.604
22	0.234	0.281	0.323	0.393	0.505	0.605	0.718	0.867	1.000	0.897	0.816	0.763	0.721	0.681
23	0.161	0.205	0.247	0.316	0.417	0.512	0.643	0.770	0.897	1.000	0.908	0.833	0.796	0.754
24	0.125	0.163	0.198	0.265	0.365	0.472	0.602	0.728	0.816	0.908	1.000	0.916	0.859	0.812
25	0.097	0.135	0.172	0.226	0.312	0.424	0.557	0.674	0.763	0.833	0.916	1.000	0.930	0.864
26	0.073	0.114	0.156	0.211	0.289	0.403	0.524	0.636	0.721	0.796	0.859	0.930	1.000	0.937
27	0.068	0.108	0.154	0.209	0.289	0.383	0.494	0.604	0.681	0.754	0.812	0.864	0.937	1.000

TABLE VI.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN MERIDIONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(b) February

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.631	0.372	0.318	0.273	0.230	0.188	0.150	0.111	0.088	0.045	0.028	0.011	0.002
1	0.631	1.000	0.759	0.616	0.518	0.436	0.375	0.328	0.286	0.253	0.207	0.177	0.128	0.082
2	0.372	0.759	1.000	0.868	0.761	0.680	0.627	0.584	0.544	0.505	0.458	0.422	0.366	0.320
3	0.318	0.616	0.868	1.000	0.911	0.832	0.785	0.745	0.706	0.674	0.625	0.589	0.539	0.495
4	0.273	0.518	0.761	0.911	1.000	0.931	0.875	0.832	0.790	0.755	0.707	0.669	0.619	0.577
5	0.230	0.436	0.680	0.832	0.931	1.000	0.944	0.901	0.861	0.822	0.777	0.737	0.688	0.649
6	0.188	0.375	0.627	0.785	0.875	0.944	1.000	0.956	0.914	0.872	0.830	0.789	0.741	0.704
7	0.150	0.328	0.584	0.745	0.832	0.901	0.956	1.000	0.960	0.918	0.876	0.835	0.788	0.752
8	0.111	0.286	0.544	0.706	0.790	0.861	0.914	0.960	1.000	0.964	0.920	0.878	0.828	0.790
9	0.088	0.253	0.505	0.674	0.755	0.822	0.872	0.918	0.964	1.000	0.960	0.915	0.864	0.822
10	0.045	0.207	0.458	0.625	0.707	0.777	0.830	0.876	0.920	0.960	1.000	0.953	0.899	0.853
11	0.028	0.177	0.422	0.589	0.669	0.737	0.789	0.835	0.878	0.915	0.953	1.000	0.945	0.888
12	0.011	0.128	0.366	0.539	0.619	0.688	0.741	0.788	0.828	0.864	0.899	0.945	1.000	0.937
13	0.002	0.082	0.320	0.495	0.577	0.649	0.704	0.752	0.790	0.822	0.853	0.888	0.937	1.000
14	-0.010	0.050	0.281	0.459	0.540	0.605	0.660	0.703	0.744	0.781	0.806	0.837	0.872	0.924
15	-0.016	0.034	0.247	0.416	0.499	0.569	0.626	0.665	0.701	0.734	0.759	0.793	0.833	0.875
16	-0.007	0.013	0.202	0.366	0.452	0.523	0.571	0.612	0.646	0.678	0.703	0.737	0.777	0.820
17	-0.026	-0.028	0.148	0.306	0.390	0.461	0.506	0.544	0.573	0.603	0.626	0.660	0.707	0.753
18	-0.053	-0.041	0.106	0.248	0.315	0.388	0.436	0.471	0.496	0.518	0.538	0.572	0.617	0.666
19	-0.057	-0.062	0.069	0.197	0.271	0.336	0.378	0.411	0.436	0.455	0.472	0.503	0.544	0.588
20	-0.077	-0.075	0.039	0.139	0.199	0.251	0.284	0.308	0.332	0.344	0.365	0.398	0.432	0.463
21	-0.107	-0.105	-0.011	0.064	0.106	0.154	0.172	0.185	0.207	0.216	0.237	0.273	0.302	0.320
22	-0.091	-0.075	0.003	0.046	0.070	0.102	0.113	0.118	0.132	0.134	0.149	0.177	0.203	0.220
23	-0.078	-0.044	0.016	0.043	0.053	0.077	0.084	0.081	0.090	0.096	0.107	0.131	0.146	0.167
24	-0.087	-0.044	0.005	0.028	0.030	0.054	0.054	0.048	0.060	0.067	0.080	0.101	0.106	0.110
25	-0.087	-0.031	0.014	0.026	0.022	0.039	0.035	0.028	0.040	0.048	0.063	0.078	0.082	0.078
26	-0.071	-0.012	0.028	0.034	0.031	0.051	0.044	0.034	0.040	0.045	0.053	0.060	0.064	0.061
27	-0.061	-0.008	0.033	0.048	0.049	0.066	0.064	0.052	0.060	0.063	0.072	0.073	0.078	0.069

(b) February – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.010	-0.016	-0.007	-0.026	-0.053	-0.057	-0.077	-0.107	-0.091	-0.078	-0.087	-0.087	-0.071	-0.061
1	0.050	0.034	0.013	-0.028	-0.041	-0.062	-0.075	-0.105	-0.075	-0.044	-0.044	-0.031	-0.012	-0.008
2	0.281	0.247	0.202	0.148	0.106	0.069	0.039	-0.011	0.003	0.016	0.005	0.014	0.028	0.033
3	0.459	0.416	0.366	0.306	0.248	0.197	0.139	0.064	0.046	0.043	0.028	0.026	0.034	0.048
4	0.540	0.499	0.452	0.390	0.315	0.271	0.199	0.106	0.070	0.053	0.030	0.022	0.031	0.049
5	0.605	0.569	0.523	0.461	0.388	0.336	0.251	0.154	0.102	0.077	0.054	0.039	0.051	0.066
6	0.660	0.626	0.571	0.506	0.436	0.378	0.284	0.172	0.113	0.084	0.054	0.035	0.044	0.064
7	0.703	0.665	0.612	0.544	0.471	0.411	0.308	0.185	0.118	0.081	0.048	0.028	0.034	0.052
8	0.744	0.701	0.646	0.573	0.496	0.436	0.332	0.207	0.132	0.090	0.060	0.040	0.040	0.060
9	0.781	0.734	0.678	0.603	0.518	0.455	0.344	0.216	0.134	0.096	0.067	0.048	0.045	0.063
10	0.806	0.759	0.703	0.626	0.538	0.472	0.365	0.237	0.149	0.107	0.080	0.063	0.053	0.072
11	0.837	0.793	0.737	0.660	0.572	0.503	0.398	0.273	0.177	0.131	0.101	0.078	0.060	0.073
12	0.872	0.833	0.777	0.707	0.617	0.544	0.432	0.302	0.203	0.146	0.106	0.082	0.064	0.078
13	0.924	0.875	0.820	0.753	0.666	0.588	0.463	0.320	0.220	0.167	0.110	0.078	0.061	0.069
14	1.000	0.925	0.851	0.787	0.714	0.630	0.510	0.355	0.240	0.179	0.123	0.094	0.076	0.082
15	0.925	1.000	0.918	0.837	0.765	0.677	0.546	0.390	0.278	0.209	0.139	0.104	0.080	0.087
16	0.851	0.918	1.000	0.900	0.800	0.729	0.597	0.446	0.340	0.266	0.195	0.152	0.108	0.108
17	0.787	0.837	0.900	1.000	0.878	0.768	0.646	0.493	0.387	0.307	0.240	0.192	0.141	0.132
18	0.714	0.765	0.800	0.878	1.000	0.851	0.695	0.552	0.445	0.357	0.280	0.224	0.170	0.154
19	0.630	0.677	0.729	0.768	0.851	1.000	0.807	0.608	0.503	0.414	0.345	0.282	0.235	0.209
20	0.510	0.546	0.597	0.646	0.695	0.807	1.000	0.786	0.643	0.530	0.453	0.393	0.345	0.286
21	0.355	0.390	0.446	0.493	0.552	0.608	0.786	1.000	0.833	0.678	0.572	0.515	0.467	0.400
22	0.240	0.278	0.340	0.387	0.445	0.503	0.643	0.833	1.000	0.832	0.697	0.613	0.554	0.481
23	0.179	0.209	0.266	0.307	0.357	0.414	0.530	0.678	0.832	1.000	0.840	0.718	0.643	0.571
24	0.123	0.139	0.195	0.240	0.280	0.345	0.453	0.572	0.697	0.840	1.000	0.840	0.717	0.620
25	0.094	0.104	0.152	0.192	0.224	0.282	0.393	0.515	0.613	0.718	0.840	1.000	0.865	0.732
26	0.076	0.080	0.108	0.141	0.170	0.235	0.345	0.467	0.554	0.643	0.717	0.865	1.000	0.881
27	0.082	0.087	0.108	0.132	0.154	0.209	0.286	0.400	0.481	0.571	0.620	0.732	0.881	1.000

TABLE VI.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN MERIDIONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(c) March

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.661	0.472	0.404	0.366	0.312	0.254	0.205	0.169	0.146	0.106	0.095	0.052	0.022
1	0.661	1.000	0.797	0.662	0.577	0.507	0.436	0.383	0.342	0.313	0.272	0.260	0.207	0.142
2	0.472	0.797	1.000	0.864	0.756	0.696	0.639	0.593	0.555	0.522	0.483	0.460	0.400	0.338
3	0.404	0.662	0.864	1.000	0.902	0.831	0.777	0.733	0.694	0.662	0.625	0.595	0.535	0.479
4	0.366	0.577	0.756	0.902	1.000	0.933	0.875	0.832	0.796	0.760	0.718	0.682	0.627	0.576
5	0.312	0.507	0.696	0.831	0.933	1.000	0.946	0.898	0.857	0.816	0.772	0.737	0.687	0.643
6	0.254	0.436	0.639	0.777	0.875	0.946	1.000	0.956	0.908	0.866	0.818	0.775	0.727	0.688
7	0.205	0.383	0.593	0.733	0.832	0.898	0.956	1.000	0.959	0.919	0.871	0.824	0.776	0.735
8	0.169	0.342	0.555	0.694	0.796	0.857	0.908	0.959	1.000	0.963	0.916	0.865	0.816	0.776
9	0.146	0.313	0.522	0.662	0.760	0.816	0.866	0.919	0.963	1.000	0.959	0.905	0.852	0.802
10	0.106	0.272	0.483	0.625	0.718	0.772	0.818	0.871	0.916	0.959	1.000	0.953	0.898	0.840
11	0.095	0.260	0.460	0.595	0.682	0.737	0.775	0.824	0.865	0.905	0.953	1.000	0.944	0.877
12	0.052	0.207	0.400	0.535	0.627	0.687	0.727	0.776	0.816	0.852	0.898	0.944	1.000	0.931
13	0.022	0.142	0.338	0.479	0.576	0.643	0.688	0.735	0.776	0.802	0.840	0.877	0.931	1.000
14	0.025	0.121	0.306	0.447	0.540	0.605	0.652	0.699	0.738	0.761	0.795	0.826	0.870	0.922
15	0.004	0.096	0.282	0.419	0.511	0.580	0.626	0.675	0.713	0.736	0.769	0.795	0.842	0.885
16	-0.006	0.078	0.247	0.381	0.475	0.539	0.585	0.632	0.668	0.691	0.723	0.753	0.802	0.842
17	-0.033	0.036	0.191	0.321	0.402	0.460	0.506	0.555	0.588	0.613	0.645	0.680	0.734	0.782
18	-0.054	-0.015	0.123	0.246	0.316	0.368	0.410	0.458	0.484	0.506	0.541	0.568	0.627	0.684
19	-0.073	-0.043	0.075	0.165	0.229	0.275	0.319	0.358	0.383	0.400	0.429	0.454	0.516	0.577
20	-0.095	-0.083	0.028	0.100	0.145	0.192	0.226	0.256	0.273	0.284	0.299	0.321	0.378	0.445
21	-0.108	-0.079	0.009	0.065	0.107	0.146	0.179	0.205	0.209	0.212	0.220	0.234	0.279	0.342
22	-0.137	-0.088	-0.015	0.022	0.053	0.084	0.108	0.135	0.137	0.138	0.150	0.154	0.197	0.248
23	-0.139	-0.068	0.006	0.036	0.047	0.070	0.091	0.115	0.115	0.117	0.119	0.120	0.149	0.195
24	-0.118	-0.055	0.011	0.024	0.041	0.062	0.080	0.104	0.102	0.099	0.099	0.094	0.118	0.152
25	-0.113	-0.043	-0.003	0.006	0.019	0.044	0.064	0.076	0.073	0.068	0.067	0.056	0.081	0.109
26	-0.085	-0.020	0.017	0.023	0.034	0.052	0.069	0.082	0.075	0.074	0.073	0.058	0.076	0.102
27	-0.068	-0.010	0.025	0.025	0.038	0.053	0.067	0.076	0.067	0.064	0.061	0.055	0.069	0.091

(c) March – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.025	0.004	-0.006	-0.033	-0.054	-0.073	-0.095	-0.108	-0.137	-0.139	-0.118	-0.113	-0.085	-0.068
1	0.121	0.096	0.078	0.036	-0.015	-0.043	-0.083	-0.079	-0.088	-0.068	-0.055	-0.043	-0.020	-0.010
2	0.306	0.282	0.247	0.191	0.123	0.075	0.028	0.009	-0.015	0.006	0.011	-0.003	0.017	0.025
3	0.447	0.419	0.381	0.321	0.246	0.165	0.100	0.065	0.022	0.036	0.024	0.006	0.023	0.025
4	0.540	0.511	0.475	0.402	0.316	0.229	0.145	0.107	0.053	0.047	0.041	0.019	0.034	0.038
5	0.605	0.580	0.539	0.460	0.368	0.275	0.192	0.146	0.084	0.070	0.062	0.044	0.052	0.053
6	0.652	0.626	0.585	0.506	0.410	0.319	0.226	0.179	0.108	0.091	0.080	0.064	0.069	0.067
7	0.699	0.675	0.632	0.555	0.458	0.358	0.256	0.205	0.135	0.115	0.104	0.076	0.082	0.076
8	0.738	0.713	0.668	0.588	0.484	0.383	0.273	0.209	0.137	0.115	0.102	0.073	0.075	0.067
9	0.761	0.736	0.691	0.613	0.506	0.400	0.284	0.212	0.138	0.117	0.099	0.068	0.074	0.064
10	0.795	0.769	0.723	0.645	0.541	0.429	0.299	0.220	0.150	0.119	0.099	0.067	0.073	0.061
11	0.826	0.795	0.753	0.680	0.568	0.454	0.321	0.234	0.154	0.120	0.094	0.056	0.058	0.055
12	0.870	0.842	0.802	0.734	0.627	0.516	0.378	0.279	0.197	0.149	0.118	0.081	0.076	0.069
13	0.922	0.885	0.842	0.782	0.684	0.577	0.445	0.342	0.248	0.195	0.152	0.109	0.102	0.091
14	1.000	0.926	0.861	0.801	0.709	0.603	0.477	0.379	0.276	0.213	0.168	0.125	0.113	0.092
15	0.926	1.000	0.915	0.826	0.729	0.625	0.497	0.400	0.291	0.226	0.181	0.137	0.125	0.100
16	0.861	0.915	1.000	0.883	0.755	0.664	0.544	0.444	0.326	0.260	0.214	0.170	0.150	0.114
17	0.801	0.826	0.883	1.000	0.849	0.727	0.607	0.495	0.376	0.316	0.260	0.206	0.181	0.145
18	0.709	0.729	0.755	0.849	1.000	0.834	0.664	0.557	0.444	0.375	0.327	0.265	0.242	0.193
19	0.603	0.625	0.664	0.727	0.834	1.000	0.771	0.629	0.521	0.443	0.389	0.328	0.305	0.250
20	0.477	0.497	0.544	0.607	0.664	0.771	1.000	0.774	0.606	0.529	0.482	0.431	0.398	0.331
21	0.379	0.400	0.444	0.495	0.557	0.629	0.774	1.000	0.774	0.640	0.580	0.525	0.486	0.416
22	0.276	0.291	0.326	0.376	0.444	0.521	0.606	0.774	1.000	0.815	0.710	0.637	0.586	0.507
23	0.213	0.226	0.260	0.316	0.375	0.443	0.529	0.640	0.815	1.000	0.841	0.730	0.675	0.595
24	0.168	0.181	0.214	0.260	0.327	0.389	0.482	0.580	0.710	0.841	1.000	0.880	0.790	0.694
25	0.125	0.137	0.170	0.206	0.265	0.328	0.431	0.525	0.637	0.730	0.880	1.000	0.896	0.764
26	0.113	0.125	0.150	0.181	0.242	0.305	0.398	0.486	0.586	0.675	0.790	0.896	1.000	0.885
27	0.092	0.100	0.114	0.145	0.193	0.250	0.331	0.416	0.507	0.595	0.694	0.764	0.885	1.000

TABLE VI.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN MERIDIONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(d) April

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.700	0.482	0.373	0.297	0.245	0.194	0.150	0.130	0.101	0.074	0.047	0.024	-0.011
1	0.700	1.000	0.783	0.622	0.528	0.462	0.394	0.348	0.325	0.295	0.271	0.240	0.210	0.159
2	0.482	0.783	1.000	0.849	0.738	0.673	0.612	0.567	0.543	0.522	0.498	0.463	0.434	0.387
3	0.373	0.622	0.849	1.000	0.901	0.821	0.768	0.725	0.704	0.682	0.660	0.626	0.587	0.547
4	0.297	0.528	0.738	0.901	1.000	0.926	0.872	0.830	0.810	0.783	0.760	0.724	0.682	0.644
5	0.245	0.462	0.673	0.821	0.926	1.000	0.948	0.902	0.875	0.845	0.816	0.774	0.729	0.693
6	0.194	0.394	0.612	0.768	0.872	0.948	1.000	0.957	0.922	0.889	0.854	0.808	0.757	0.724
7	0.150	0.348	0.567	0.725	0.830	0.902	0.957	1.000	0.967	0.932	0.888	0.842	0.792	0.757
8	0.130	0.325	0.543	0.704	0.810	0.875	0.922	0.967	1.000	0.968	0.923	0.873	0.819	0.779
9	0.101	0.295	0.522	0.682	0.783	0.845	0.889	0.932	0.968	1.000	0.964	0.915	0.862	0.817
10	0.074	0.271	0.498	0.660	0.760	0.816	0.854	0.888	0.923	0.964	1.000	0.964	0.912	0.857
11	0.047	0.240	0.463	0.626	0.724	0.774	0.808	0.842	0.873	0.915	0.964	1.000	0.954	0.889
12	0.024	0.210	0.434	0.587	0.682	0.729	0.757	0.792	0.819	0.862	0.912	0.954	1.000	0.930
13	-0.011	0.159	0.387	0.547	0.644	0.693	0.724	0.757	0.779	0.817	0.857	0.889	0.930	1.000
14	-0.033	0.111	0.345	0.512	0.609	0.658	0.692	0.728	0.746	0.778	0.806	0.831	0.860	0.917
15	-0.047	0.089	0.314	0.480	0.582	0.632	0.669	0.702	0.716	0.746	0.775	0.803	0.833	0.871
16	-0.060	0.055	0.264	0.429	0.530	0.584	0.615	0.652	0.666	0.698	0.723	0.751	0.786	0.834
17	-0.064	0.031	0.216	0.375	0.473	0.518	0.547	0.582	0.598	0.628	0.652	0.681	0.722	0.774
18	-0.080	-0.008	0.165	0.312	0.401	0.451	0.476	0.508	0.521	0.546	0.568	0.598	0.649	0.702
19	-0.111	-0.053	0.106	0.243	0.328	0.383	0.403	0.435	0.445	0.470	0.490	0.521	0.569	0.639
20	-0.090	-0.040	0.099	0.203	0.273	0.322	0.336	0.357	0.364	0.383	0.401	0.430	0.473	0.543
21	-0.081	-0.067	0.061	0.138	0.184	0.226	0.241	0.266	0.279	0.294	0.311	0.333	0.378	0.443
22	-0.074	-0.073	0.027	0.108	0.147	0.182	0.195	0.218	0.231	0.239	0.256	0.272	0.313	0.371
23	-0.041	-0.061	0.028	0.079	0.108	0.141	0.144	0.163	0.171	0.177	0.193	0.213	0.257	0.308
24	-0.032	-0.068	0.004	0.042	0.060	0.091	0.102	0.126	0.126	0.129	0.143	0.160	0.198	0.237
25	-0.015	-0.041	0.025	0.063	0.075	0.095	0.100	0.118	0.113	0.116	0.130	0.147	0.187	0.220
26	-0.002	-0.028	0.028	0.062	0.077	0.086	0.083	0.093	0.085	0.086	0.098	0.115	0.154	0.179
27	-0.029	-0.055	0.002	0.038	0.053	0.072	0.068	0.080	0.071	0.066	0.076	0.090	0.125	0.151

(d) April – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.033	-0.047	-0.060	-0.064	-0.080	-0.111	-0.090	-0.081	-0.074	-0.041	-0.032	-0.015	-0.002	-0.029
1	0.111	0.089	0.055	0.031	-0.008	-0.053	-0.040	-0.067	-0.073	-0.061	-0.068	-0.041	-0.028	-0.055
2	0.345	0.314	0.264	0.216	0.165	0.106	0.099	0.061	0.027	0.028	0.004	0.025	0.028	0.002
3	0.512	0.480	0.429	0.375	0.312	0.243	0.203	0.138	0.108	0.079	0.042	0.063	0.062	0.038
4	0.609	0.582	0.530	0.473	0.401	0.328	0.273	0.184	0.147	0.108	0.060	0.075	0.077	0.053
5	0.658	0.632	0.584	0.518	0.451	0.383	0.322	0.226	0.182	0.141	0.091	0.095	0.086	0.072
6	0.692	0.669	0.615	0.547	0.476	0.403	0.336	0.241	0.195	0.144	0.102	0.100	0.083	0.068
7	0.728	0.702	0.652	0.582	0.508	0.435	0.357	0.266	0.218	0.163	0.126	0.118	0.093	0.080
8	0.746	0.716	0.666	0.598	0.521	0.445	0.364	0.279	0.231	0.171	0.126	0.113	0.085	0.071
9	0.778	0.746	0.698	0.628	0.546	0.470	0.383	0.294	0.239	0.177	0.129	0.116	0.086	0.066
10	0.806	0.775	0.723	0.652	0.568	0.490	0.401	0.311	0.256	0.193	0.143	0.130	0.098	0.076
11	0.831	0.803	0.751	0.681	0.598	0.521	0.430	0.333	0.272	0.213	0.160	0.147	0.115	0.090
12	0.860	0.833	0.786	0.722	0.649	0.569	0.473	0.378	0.313	0.257	0.198	0.187	0.154	0.125
13	0.917	0.871	0.834	0.774	0.702	0.639	0.543	0.443	0.371	0.308	0.237	0.220	0.179	0.151
14	1.000	0.928	0.867	0.817	0.751	0.679	0.580	0.482	0.396	0.328	0.256	0.232	0.179	0.149
15	0.928	1.000	0.923	0.841	0.782	0.717	0.610	0.512	0.424	0.335	0.262	0.230	0.181	0.159
16	0.867	0.923	1.000	0.904	0.804	0.744	0.642	0.548	0.457	0.362	0.274	0.226	0.167	0.135
17	0.817	0.841	0.904	1.000	0.879	0.777	0.684	0.579	0.479	0.380	0.279	0.233	0.155	0.112
18	0.751	0.782	0.804	0.879	1.000	0.852	0.715	0.605	0.503	0.405	0.304	0.251	0.172	0.135
19	0.679	0.717	0.744	0.777	0.852	1.000	0.806	0.639	0.543	0.445	0.355	0.282	0.199	0.158
20	0.580	0.610	0.642	0.684	0.715	0.806	1.000	0.765	0.591	0.500	0.403	0.325	0.226	0.176
21	0.482	0.512	0.548	0.579	0.605	0.639	0.765	1.000	0.763	0.582	0.474	0.386	0.290	0.242
22	0.396	0.424	0.457	0.479	0.503	0.543	0.591	0.763	1.000	0.751	0.569	0.489	0.403	0.354
23	0.328	0.335	0.362	0.380	0.405	0.445	0.500	0.582	0.751	1.000	0.786	0.616	0.509	0.464
24	0.256	0.262	0.274	0.279	0.304	0.355	0.403	0.474	0.569	0.786	1.000	0.810	0.668	0.595
25	0.232	0.230	0.226	0.233	0.251	0.282	0.325	0.386	0.489	0.616	0.810	1.000	0.855	0.730
26	0.179	0.181	0.167	0.155	0.172	0.199	0.226	0.290	0.403	0.509	0.668	0.855	1.000	0.871
27	0.149	0.159	0.135	0.112	0.135	0.158	0.176	0.242	0.354	0.464	0.595	0.730	0.871	1.000

TABLE VI.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN MERIDIONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – *Continued*

(e) May

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.608	0.301	0.202	0.190	0.146	0.099	0.061	0.032	0.009	-0.025	-0.037	-0.056	-0.081
1	0.608	1.000	0.673	0.482	0.430	0.389	0.328	0.282	0.252	0.215	0.173	0.152	0.135	0.106
2	0.301	0.673	1.000	0.824	0.736	0.682	0.634	0.594	0.561	0.523	0.477	0.448	0.426	0.408
3	0.202	0.482	0.824	1.000	0.900	0.836	0.791	0.749	0.716	0.680	0.636	0.600	0.573	0.551
4	0.190	0.430	0.736	0.900	1.000	0.930	0.878	0.833	0.794	0.755	0.707	0.666	0.640	0.618
5	0.146	0.389	0.682	0.836	0.930	1.000	0.944	0.895	0.856	0.813	0.765	0.726	0.700	0.682
6	0.099	0.328	0.634	0.791	0.878	0.944	1.000	0.954	0.917	0.871	0.821	0.782	0.750	0.730
7	0.061	0.282	0.594	0.749	0.833	0.895	0.954	1.000	0.962	0.918	0.869	0.825	0.786	0.764
8	0.032	0.252	0.561	0.716	0.794	0.856	0.917	0.962	1.000	0.964	0.914	0.869	0.826	0.795
9	0.009	0.215	0.523	0.680	0.755	0.813	0.871	0.918	0.964	1.000	0.960	0.913	0.863	0.816
10	-0.025	0.173	0.477	0.636	0.707	0.765	0.821	0.869	0.914	0.960	1.000	0.963	0.912	0.848
11	-0.037	0.152	0.448	0.600	0.666	0.726	0.782	0.825	0.869	0.913	0.963	1.000	0.952	0.871
12	-0.056	0.135	0.426	0.573	0.640	0.700	0.750	0.786	0.826	0.863	0.912	0.952	1.000	0.922
13	-0.081	0.106	0.408	0.551	0.618	0.682	0.730	0.764	0.795	0.816	0.848	0.871	0.922	1.000
14	-0.098	0.102	0.408	0.548	0.610	0.675	0.720	0.747	0.767	0.779	0.797	0.814	0.849	0.909
15	-0.129	0.060	0.373	0.514	0.577	0.635	0.682	0.704	0.720	0.728	0.745	0.758	0.796	0.845
16	-0.142	0.023	0.326	0.467	0.528	0.587	0.634	0.656	0.669	0.675	0.686	0.701	0.737	0.797
17	-0.152	-0.003	0.291	0.423	0.483	0.541	0.581	0.602	0.612	0.615	0.626	0.641	0.680	0.743
18	-0.158	-0.026	0.251	0.371	0.418	0.465	0.508	0.530	0.537	0.538	0.546	0.557	0.592	0.659
19	-0.143	-0.053	0.198	0.314	0.360	0.398	0.438	0.465	0.470	0.462	0.463	0.476	0.509	0.574
20	-0.129	-0.042	0.164	0.260	0.292	0.332	0.364	0.388	0.386	0.380	0.388	0.397	0.423	0.483
21	-0.113	-0.040	0.137	0.205	0.235	0.270	0.308	0.323	0.310	0.302	0.310	0.313	0.336	0.392
22	-0.101	-0.040	0.088	0.140	0.159	0.194	0.220	0.231	0.213	0.202	0.208	0.211	0.224	0.261
23	-0.090	-0.057	0.046	0.079	0.096	0.127	0.144	0.146	0.125	0.111	0.109	0.106	0.112	0.154
24	-0.080	-0.064	-0.001	0.037	0.047	0.073	0.088	0.089	0.071	0.042	0.035	0.030	0.035	0.080
25	-0.069	-0.077	-0.018	0.009	0.001	0.010	0.022	0.032	0.011	-0.010	-0.016	-0.024	-0.023	0.015
26	-0.067	-0.076	-0.016	0.020	0.002	-0.003	0.010	0.022	0.009	-0.006	-0.014	-0.024	-0.035	-0.014
27	-0.047	-0.049	0.001	0.032	0.027	0.023	0.036	0.041	0.033	0.011	0.002	-0.008	-0.018	-0.005

(e) May – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.098	-0.129	-0.142	-0.152	-0.158	-0.143	-0.129	-0.113	-0.101	-0.090	-0.080	-0.069	-0.067	-0.047
1	0.102	0.060	0.023	-0.003	-0.026	-0.053	-0.042	-0.040	-0.040	-0.057	-0.064	-0.077	-0.076	-0.049
2	0.408	0.373	0.326	0.291	0.251	0.198	0.164	0.137	0.088	0.046	-0.001	-0.018	-0.016	0.001
3	0.548	0.514	0.467	0.423	0.371	0.314	0.260	0.205	0.140	0.079	0.037	0.009	0.020	0.032
4	0.610	0.577	0.528	0.483	0.418	0.360	0.292	0.235	0.159	0.096	0.047	0.001	0.002	0.027
5	0.675	0.635	0.587	0.541	0.465	0.398	0.332	0.270	0.194	0.127	0.073	0.010	-0.003	0.023
6	0.720	0.682	0.634	0.581	0.508	0.438	0.364	0.308	0.220	0.144	0.088	0.022	0.010	0.036
7	0.747	0.704	0.656	0.602	0.530	0.465	0.388	0.323	0.231	0.146	0.089	0.032	0.022	0.041
8	0.767	0.720	0.669	0.612	0.537	0.470	0.386	0.310	0.213	0.125	0.071	0.011	0.009	0.033
9	0.779	0.728	0.675	0.615	0.538	0.462	0.380	0.302	0.202	0.111	0.042	-0.010	-0.006	0.011
10	0.797	0.745	0.686	0.626	0.546	0.463	0.388	0.310	0.208	0.109	0.035	-0.016	-0.014	0.002
11	0.814	0.758	0.701	0.641	0.557	0.476	0.397	0.313	0.211	0.106	0.030	-0.024	-0.024	-0.008
12	0.849	0.796	0.737	0.680	0.592	0.509	0.423	0.336	0.224	0.112	0.035	-0.023	-0.035	-0.018
13	0.909	0.845	0.797	0.743	0.659	0.574	0.483	0.392	0.261	0.154	0.080	0.015	-0.014	-0.005
14	1.000	0.912	0.853	0.797	0.724	0.641	0.533	0.438	0.308	0.199	0.111	0.034	0.001	0.010
15	0.912	1.000	0.921	0.848	0.786	0.707	0.601	0.502	0.358	0.245	0.139	0.063	0.033	0.038
16	0.853	0.921	1.000	0.907	0.822	0.743	0.643	0.539	0.393	0.276	0.172	0.090	0.055	0.052
17	0.797	0.848	0.907	1.000	0.890	0.773	0.661	0.554	0.414	0.306	0.191	0.098	0.055	0.054
18	0.724	0.786	0.822	0.890	1.000	0.855	0.694	0.573	0.425	0.312	0.206	0.119	0.075	0.066
19	0.641	0.707	0.743	0.773	0.855	1.000	0.790	0.600	0.451	0.338	0.236	0.151	0.106	0.080
20	0.533	0.601	0.643	0.661	0.694	0.790	1.000	0.732	0.499	0.366	0.272	0.200	0.150	0.121
21	0.438	0.502	0.539	0.554	0.573	0.600	0.732	1.000	0.681	0.414	0.313	0.218	0.174	0.146
22	0.308	0.358	0.393	0.414	0.425	0.451	0.499	0.681	1.000	0.679	0.446	0.324	0.272	0.224
23	0.199	0.245	0.276	0.306	0.312	0.338	0.366	0.414	0.679	1.000	0.700	0.436	0.345	0.288
24	0.111	0.139	0.172	0.191	0.206	0.236	0.272	0.313	0.446	0.700	1.000	0.697	0.495	0.410
25	0.034	0.063	0.090	0.098	0.119	0.151	0.200	0.218	0.324	0.436	0.697	1.000	0.758	0.559
26	0.001	0.033	0.055	0.055	0.075	0.106	0.150	0.174	0.272	0.345	0.495	0.758	1.000	0.770
27	0.010	0.038	0.052	0.054	0.066	0.080	0.121	0.146	0.224	0.288	0.410	0.559	0.770	1.000

TABLE VI.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN MERIDIONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(f) June

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.619	0.382	0.285	0.254	0.218	0.185	0.143	0.082	0.039	0.013	-0.012	-0.040	-0.033
1	0.619	1.000	0.691	0.517	0.475	0.440	0.391	0.342	0.280	0.222	0.183	0.152	0.129	0.124
2	0.382	0.691	1.000	0.809	0.724	0.677	0.620	0.572	0.525	0.464	0.404	0.362	0.334	0.328
3	0.285	0.517	0.809	1.000	0.882	0.806	0.752	0.707	0.661	0.602	0.545	0.505	0.471	0.457
4	0.254	0.475	0.724	0.882	1.000	0.907	0.851	0.807	0.762	0.704	0.646	0.603	0.571	0.558
5	0.218	0.440	0.677	0.806	0.907	1.000	0.924	0.868	0.821	0.763	0.703	0.659	0.621	0.603
6	0.185	0.391	0.620	0.752	0.851	0.924	1.000	0.933	0.881	0.828	0.767	0.718	0.682	0.661
7	0.143	0.342	0.572	0.707	0.807	0.868	0.933	1.000	0.947	0.888	0.826	0.776	0.733	0.707
8	0.082	0.280	0.525	0.661	0.762	0.821	0.881	0.947	1.000	0.950	0.891	0.843	0.799	0.768
9	0.039	0.222	0.464	0.602	0.704	0.763	0.828	0.888	0.950	1.000	0.956	0.908	0.860	0.823
10	0.013	0.183	0.404	0.545	0.646	0.703	0.767	0.826	0.891	0.956	1.000	0.960	0.907	0.860
11	-0.012	0.152	0.362	0.505	0.603	0.659	0.718	0.776	0.843	0.908	0.960	1.000	0.954	0.892
12	-0.040	0.129	0.334	0.471	0.571	0.621	0.682	0.733	0.799	0.860	0.907	0.954	1.000	0.938
13	-0.033	0.124	0.328	0.457	0.558	0.603	0.661	0.707	0.768	0.823	0.860	0.892	0.938	1.000
14	-0.022	0.121	0.325	0.459	0.566	0.613	0.656	0.695	0.745	0.781	0.800	0.816	0.843	0.905
15	-0.011	0.112	0.321	0.452	0.560	0.606	0.644	0.675	0.710	0.730	0.738	0.751	0.766	0.809
16	-0.007	0.093	0.311	0.435	0.527	0.572	0.603	0.630	0.655	0.673	0.678	0.683	0.694	0.737
17	-0.009	0.101	0.290	0.405	0.480	0.523	0.559	0.586	0.606	0.608	0.606	0.605	0.614	0.652
18	-0.014	0.106	0.268	0.358	0.417	0.452	0.485	0.513	0.533	0.531	0.522	0.519	0.527	0.563
19	-0.004	0.101	0.219	0.274	0.329	0.367	0.392	0.418	0.427	0.422	0.406	0.400	0.395	0.440
20	0.012	0.077	0.145	0.201	0.235	0.255	0.283	0.293	0.296	0.299	0.297	0.286	0.275	0.306
21	-0.007	0.014	0.078	0.102	0.131	0.148	0.161	0.170	0.174	0.180	0.174	0.165	0.157	0.194
22	-0.029	-0.025	0.036	0.033	0.071	0.085	0.100	0.100	0.102	0.101	0.086	0.079	0.070	0.102
23	-0.046	-0.061	-0.004	-0.000	0.019	0.032	0.038	0.034	0.036	0.027	0.011	0.008	0.009	0.025
24	-0.058	-0.097	-0.042	-0.032	-0.004	0.013	0.013	0.011	0.010	0.007	-0.005	-0.001	-0.001	0.013
25	-0.056	-0.075	-0.049	-0.044	-0.036	-0.039	-0.035	-0.033	-0.047	-0.051	-0.054	-0.051	-0.054	-0.037
26	-0.074	-0.058	-0.058	-0.046	-0.046	-0.056	-0.062	-0.054	-0.065	-0.062	-0.060	-0.059	-0.063	-0.048
27	-0.068	-0.059	-0.055	-0.032	-0.021	-0.015	-0.015	-0.003	-0.009	-0.004	-0.006	-0.005	-0.010	-0.008

(f) June – Concluded

Altitude level i, km	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.022	-0.011	-0.007	-0.009	-0.014	-0.004	0.012	-0.007	-0.029	-0.046	-0.058	-0.056	-0.074	-0.068
1	0.121	0.112	0.093	0.101	0.106	0.101	0.077	0.014	-0.025	-0.061	-0.097	-0.075	-0.058	-0.059
2	0.325	0.321	0.311	0.290	0.268	0.219	0.145	0.078	0.036	-0.004	-0.042	-0.049	-0.058	-0.055
3	0.459	0.452	0.435	0.405	0.358	0.274	0.201	0.102	0.033	-0.000	-0.032	-0.044	-0.046	-0.032
4	0.566	0.560	0.527	0.480	0.417	0.329	0.235	0.131	0.071	0.019	-0.004	-0.036	-0.046	-0.021
5	0.613	0.606	0.572	0.523	0.452	0.367	0.255	0.148	0.085	0.032	0.013	-0.039	-0.056	-0.015
6	0.656	0.644	0.603	0.559	0.485	0.392	0.283	0.161	0.100	0.038	0.013	-0.035	-0.062	-0.015
7	0.695	0.675	0.630	0.586	0.513	0.418	0.293	0.170	0.100	0.034	0.011	-0.033	-0.054	-0.003
8	0.745	0.710	0.655	0.606	0.533	0.427	0.296	0.174	0.102	0.036	0.010	-0.047	-0.065	-0.009
9	0.781	0.730	0.673	0.608	0.531	0.422	0.299	0.180	0.101	0.027	0.007	-0.051	-0.062	-0.004
10	0.800	0.738	0.678	0.606	0.522	0.406	0.297	0.174	0.086	0.011	-0.005	-0.054	-0.060	-0.006
11	0.816	0.751	0.683	0.605	0.519	0.400	0.286	0.165	0.079	0.008	-0.001	-0.051	-0.059	-0.005
12	0.843	0.766	0.694	0.614	0.527	0.395	0.275	0.157	0.070	0.009	-0.001	-0.054	-0.063	-0.010
13	0.905	0.809	0.737	0.652	0.563	0.440	0.306	0.194	0.102	0.025	0.013	-0.037	-0.048	-0.008
14	1.000	0.891	0.797	0.713	0.627	0.510	0.370	0.256	0.159	0.064	0.042	-0.016	-0.022	0.018
15	0.891	1.000	0.891	0.781	0.688	0.575	0.440	0.308	0.197	0.108	0.076	0.015	0.028	0.051
16	0.797	0.891	1.000	0.863	0.722	0.612	0.457	0.325	0.208	0.119	0.114	0.052	0.050	0.081
17	0.713	0.781	0.863	1.000	0.801	0.633	0.472	0.339	0.224	0.134	0.122	0.076	0.067	0.091
18	0.627	0.688	0.722	0.801	1.000	0.742	0.505	0.360	0.246	0.151	0.104	0.069	0.075	0.085
19	0.510	0.575	0.612	0.633	0.742	1.000	0.670	0.428	0.311	0.195	0.153	0.092	0.089	0.104
20	0.370	0.440	0.457	0.472	0.505	0.670	1.000	0.656	0.375	0.227	0.150	0.101	0.096	0.054
21	0.256	0.308	0.325	0.339	0.360	0.428	0.656	1.000	0.610	0.322	0.183	0.123	0.095	0.073
22	0.159	0.197	0.208	0.224	0.246	0.311	0.375	0.610	1.000	0.614	0.307	0.189	0.153	0.105
23	0.064	0.108	0.119	0.134	0.151	0.195	0.227	0.322	0.614	1.000	0.607	0.298	0.217	0.122
24	0.042	0.076	0.114	0.122	0.104	0.153	0.150	0.183	0.307	0.607	1.000	0.619	0.345	0.199
25	-0.016	0.015	0.052	0.076	0.069	0.092	0.101	0.123	0.189	0.298	0.619	1.000	0.633	0.308
26	-0.022	0.028	0.050	0.067	0.075	0.089	0.096	0.095	0.153	0.217	0.345	0.633	1.000	0.639
27	0.018	0.051	0.081	0.091	0.085	0.104	0.054	0.073	0.105	0.122	0.199	0.308	0.639	1.000

TABLE VI.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN MERIDIONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(g) July

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.648	0.464	0.401	0.360	0.309	0.263	0.195	0.137	0.082	0.033	-0.002	-0.015	-0.031
1	0.648	1.000	0.706	0.532	0.471	0.428	0.363	0.277	0.198	0.121	0.066	0.027	0.009	-0.009
2	0.464	0.706	1.000	0.790	0.687	0.630	0.554	0.465	0.392	0.318	0.267	0.225	0.209	0.190
3	0.401	0.532	0.790	1.000	0.857	0.761	0.679	0.594	0.529	0.455	0.416	0.376	0.360	0.336
4	0.360	0.471	0.687	0.857	1.000	0.875	0.791	0.714	0.649	0.584	0.542	0.505	0.489	0.465
5	0.309	0.428	0.630	0.761	0.875	1.000	0.890	0.807	0.737	0.670	0.617	0.576	0.555	0.534
6	0.263	0.363	0.554	0.679	0.791	0.890	1.000	0.908	0.838	0.775	0.716	0.673	0.646	0.622
7	0.195	0.277	0.465	0.594	0.714	0.807	0.908	1.000	0.923	0.857	0.795	0.748	0.718	0.690
8	0.137	0.198	0.392	0.529	0.649	0.737	0.838	0.923	1.000	0.937	0.876	0.829	0.788	0.757
9	0.082	0.121	0.318	0.455	0.584	0.670	0.775	0.857	0.937	1.000	0.949	0.895	0.842	0.802
10	0.033	0.066	0.267	0.416	0.542	0.617	0.716	0.795	0.876	0.949	1.000	0.952	0.884	0.829
11	-0.002	0.027	0.225	0.376	0.505	0.576	0.673	0.748	0.829	0.895	0.952	1.000	0.945	0.875
12	-0.015	0.009	0.209	0.360	0.489	0.555	0.646	0.718	0.788	0.842	0.884	0.945	1.000	0.936
13	-0.031	-0.009	0.190	0.336	0.465	0.534	0.622	0.690	0.757	0.802	0.829	0.875	0.936	1.000
14	-0.019	0.005	0.202	0.344	0.469	0.546	0.630	0.696	0.746	0.773	0.785	0.808	0.850	0.912
15	0.026	0.047	0.227	0.372	0.497	0.569	0.648	0.696	0.724	0.739	0.739	0.752	0.786	0.816
16	0.051	0.056	0.248	0.386	0.494	0.558	0.624	0.659	0.672	0.680	0.682	0.688	0.719	0.751
17	0.039	0.057	0.221	0.342	0.430	0.492	0.548	0.582	0.597	0.601	0.601	0.618	0.651	0.697
18	0.039	0.071	0.189	0.278	0.352	0.401	0.455	0.493	0.517	0.522	0.515	0.528	0.560	0.608
19	0.013	0.053	0.142	0.190	0.262	0.307	0.351	0.390	0.410	0.415	0.409	0.415	0.446	0.491
20	-0.015	0.035	0.102	0.144	0.184	0.213	0.255	0.292	0.304	0.319	0.309	0.306	0.319	0.360
21	-0.047	-0.001	0.065	0.080	0.104	0.113	0.149	0.175	0.185	0.192	0.185	0.177	0.182	0.214
22	-0.073	-0.046	0.022	0.023	0.048	0.065	0.081	0.098	0.102	0.101	0.095	0.094	0.100	0.117
23	-0.067	-0.036	0.016	0.032	0.055	0.075	0.093	0.090	0.089	0.084	0.082	0.084	0.090	0.101
24	-0.020	-0.019	0.018	0.038	0.037	0.048	0.051	0.045	0.050	0.045	0.038	0.042	0.040	0.045
25	0.003	-0.029	0.012	0.024	0.014	0.019	0.018	0.013	0.026	0.027	0.020	0.029	0.023	0.036
26	0.009	-0.005	0.024	0.016	0.012	0.014	0.021	0.019	0.027	0.022	0.022	0.037	0.038	0.048
27	-0.020	-0.014	0.032	0.029	0.033	0.035	0.045	0.047	0.058	0.052	0.057	0.066	0.070	0.075

(g) July – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.019	0.026	0.051	0.039	0.039	0.013	-0.015	-0.047	-0.073	-0.067	-0.020	0.003	0.009	-0.020
1	0.005	0.047	0.056	0.057	0.071	0.053	0.035	-0.001	-0.046	-0.036	-0.019	-0.029	-0.005	-0.014
2	0.202	0.227	0.248	0.221	0.189	0.142	0.102	0.065	0.022	0.016	0.018	0.012	0.024	0.032
3	0.344	0.372	0.386	0.342	0.278	0.190	0.144	0.080	0.023	0.032	0.038	0.024	0.018	0.029
4	0.469	0.497	0.494	0.430	0.352	0.262	0.184	0.104	0.048	0.055	0.037	0.014	0.012	0.033
5	0.546	0.569	0.558	0.492	0.401	0.307	0.213	0.113	0.065	0.075	0.048	0.019	0.014	0.035
6	0.630	0.648	0.624	0.548	0.455	0.351	0.255	0.149	0.081	0.093	0.051	0.018	0.021	0.045
7	0.696	0.696	0.659	0.582	0.493	0.390	0.292	0.175	0.098	0.090	0.045	0.013	0.019	0.047
8	0.746	0.724	0.672	0.597	0.517	0.410	0.304	0.185	0.102	0.089	0.050	0.026	0.027	0.058
9	0.773	0.739	0.680	0.601	0.522	0.415	0.319	0.192	0.101	0.084	0.045	0.027	0.022	0.052
10	0.785	0.739	0.682	0.601	0.515	0.409	0.309	0.185	0.095	0.082	0.038	0.020	0.022	0.057
11	0.808	0.752	0.688	0.618	0.528	0.415	0.306	0.177	0.094	0.084	0.042	0.029	0.037	0.066
12	0.850	0.786	0.719	0.651	0.560	0.446	0.319	0.182	0.100	0.090	0.040	0.023	0.038	0.070
13	0.912	0.816	0.751	0.697	0.608	0.491	0.360	0.214	0.117	0.101	0.045	0.036	0.048	0.075
14	1.000	0.894	0.803	0.749	0.662	0.543	0.410	0.270	0.162	0.125	0.066	0.049	0.068	0.084
15	0.894	1.000	0.889	0.781	0.699	0.578	0.436	0.311	0.208	0.180	0.098	0.064	0.068	0.071
16	0.803	0.889	1.000	0.847	0.704	0.598	0.455	0.325	0.221	0.191	0.103	0.069	0.074	0.088
17	0.749	0.781	0.847	1.000	0.784	0.606	0.470	0.332	0.216	0.184	0.103	0.085	0.095	0.109
18	0.662	0.699	0.704	0.784	1.000	0.718	0.501	0.358	0.212	0.180	0.098	0.069	0.059	0.055
19	0.543	0.578	0.598	0.606	0.718	1.000	0.664	0.387	0.240	0.221	0.149	0.104	0.080	0.056
20	0.410	0.436	0.455	0.470	0.501	0.664	1.000	0.619	0.290	0.218	0.162	0.126	0.092	0.093
21	0.270	0.311	0.325	0.332	0.358	0.387	0.619	1.000	0.609	0.330	0.173	0.113	0.084	0.088
22	0.162	0.208	0.221	0.216	0.212	0.240	0.290	0.609	1.000	0.627	0.287	0.144	0.103	0.107
23	0.125	0.180	0.191	0.184	0.180	0.221	0.218	0.330	0.627	1.000	0.626	0.327	0.201	0.151
24	0.066	0.098	0.103	0.103	0.098	0.149	0.162	0.173	0.287	0.626	1.000	0.647	0.349	0.198
25	0.049	0.064	0.069	0.085	0.069	0.104	0.126	0.113	0.144	0.327	0.647	1.000	0.667	0.374
26	0.068	0.068	0.074	0.095	0.059	0.080	0.092	0.084	0.103	0.201	0.349	0.667	1.000	0.690
27	0.084	0.071	0.088	0.109	0.055	0.056	0.093	0.088	0.107	0.151	0.198	0.374	0.690	1.000

TABLE VI.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN MERIDIONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(h) August

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.634	0.359	0.263	0.237	0.215	0.179	0.115	0.053	-0.006	-0.060	-0.087	-0.098	-0.102
1	0.634	1.000	0.688	0.506	0.466	0.421	0.377	0.305	0.218	0.142	0.066	0.032	0.015	0.014
2	0.359	0.688	1.000	0.804	0.715	0.656	0.603	0.540	0.457	0.382	0.310	0.269	0.254	0.254
3	0.263	0.506	0.804	1.000	0.865	0.784	0.724	0.664	0.600	0.530	0.463	0.429	0.414	0.413
4	0.237	0.466	0.715	0.865	1.000	0.897	0.823	0.759	0.691	0.616	0.551	0.515	0.497	0.503
5	0.215	0.421	0.656	0.784	0.897	1.000	0.902	0.831	0.764	0.692	0.625	0.587	0.571	0.577
6	0.179	0.377	0.603	0.724	0.823	0.902	1.000	0.915	0.839	0.765	0.696	0.654	0.631	0.634
7	0.115	0.305	0.540	0.664	0.759	0.831	0.915	1.000	0.929	0.857	0.791	0.742	0.718	0.714
8	0.053	0.218	0.457	0.600	0.691	0.764	0.839	0.929	1.000	0.938	0.874	0.824	0.795	0.785
9	-0.006	0.142	0.382	0.530	0.616	0.692	0.765	0.857	0.938	1.000	0.950	0.898	0.861	0.835
10	-0.060	0.066	0.310	0.463	0.551	0.625	0.696	0.791	0.874	0.950	1.000	0.960	0.913	0.871
11	-0.087	0.032	0.269	0.429	0.515	0.587	0.654	0.742	0.824	0.898	0.960	1.000	0.960	0.903
12	-0.098	0.015	0.254	0.414	0.497	0.571	0.631	0.718	0.795	0.861	0.913	0.960	1.000	0.947
13	-0.102	0.014	0.254	0.413	0.503	0.577	0.634	0.714	0.785	0.835	0.871	0.903	0.947	1.000
14	-0.098	0.017	0.255	0.411	0.506	0.576	0.646	0.717	0.782	0.819	0.837	0.850	0.872	0.925
15	-0.079	0.038	0.286	0.434	0.527	0.592	0.661	0.719	0.765	0.788	0.795	0.802	0.820	0.859
16	-0.044	0.057	0.300	0.442	0.532	0.592	0.646	0.689	0.724	0.735	0.732	0.737	0.748	0.791
17	-0.029	0.072	0.287	0.408	0.477	0.535	0.575	0.612	0.648	0.657	0.646	0.653	0.670	0.718
18	-0.046	0.065	0.245	0.333	0.387	0.432	0.470	0.507	0.538	0.549	0.544	0.552	0.566	0.607
19	-0.054	0.049	0.174	0.236	0.287	0.325	0.354	0.378	0.397	0.404	0.407	0.408	0.412	0.450
20	-0.061	0.024	0.106	0.141	0.184	0.201	0.236	0.266	0.282	0.284	0.284	0.286	0.291	0.302
21	-0.076	-0.006	0.064	0.084	0.116	0.135	0.163	0.192	0.201	0.209	0.202	0.205	0.202	0.208
22	-0.086	-0.047	0.014	0.015	0.032	0.055	0.085	0.111	0.109	0.119	0.114	0.114	0.111	0.126
23	-0.065	-0.061	0.006	0.015	0.017	0.023	0.049	0.064	0.071	0.075	0.067	0.069	0.075	0.082
24	-0.027	-0.053	0.014	0.015	0.005	-0.001	0.013	0.011	0.017	0.019	0.015	0.014	0.028	0.044
25	0.005	-0.019	0.012	0.012	0.005	0.003	0.003	-0.005	0.001	0.004	-0.006	-0.004	0.006	0.016
26	-0.038	-0.037	-0.036	-0.022	-0.016	-0.022	-0.019	-0.015	-0.012	-0.009	-0.006	-0.007	0.001	0.006
27	-0.045	-0.024	-0.016	-0.014	0.008	0.008	0.013	0.015	0.025	0.033	0.038	0.036	0.040	0.046

(h) August – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.098	-0.079	-0.044	-0.029	-0.046	-0.054	-0.061	-0.076	-0.086	-0.065	-0.027	0.005	-0.038	-0.045
1	0.017	0.038	0.057	0.072	0.065	0.049	0.024	-0.006	-0.047	-0.061	-0.053	-0.019	-0.037	-0.024
2	0.255	0.286	0.300	0.287	0.245	0.174	0.106	0.064	0.014	0.006	0.014	0.012	-0.036	-0.016
3	0.411	0.434	0.442	0.408	0.333	0.236	0.141	0.084	0.015	0.015	0.015	0.012	-0.022	-0.014
4	0.506	0.527	0.532	0.477	0.387	0.287	0.184	0.116	0.032	0.017	0.005	0.005	-0.016	0.008
5	0.576	0.592	0.592	0.535	0.432	0.325	0.201	0.135	0.055	0.023	-0.001	0.003	-0.022	0.008
6	0.646	0.661	0.646	0.575	0.470	0.354	0.236	0.163	0.085	0.049	0.013	0.003	-0.019	0.013
7	0.717	0.719	0.689	0.612	0.507	0.378	0.266	0.192	0.111	0.064	0.011	-0.005	-0.015	0.015
8	0.782	0.765	0.724	0.648	0.538	0.397	0.282	0.201	0.109	0.071	0.017	0.001	-0.012	0.025
9	0.819	0.788	0.735	0.657	0.549	0.404	0.284	0.209	0.119	0.075	0.019	0.004	-0.009	0.033
10	0.837	0.795	0.732	0.646	0.544	0.407	0.284	0.202	0.114	0.067	0.015	-0.006	-0.006	0.038
11	0.850	0.802	0.737	0.653	0.552	0.408	0.286	0.205	0.114	0.069	0.014	-0.004	-0.007	0.036
12	0.872	0.820	0.748	0.670	0.566	0.412	0.291	0.202	0.111	0.075	0.028	0.006	0.001	0.040
13	0.925	0.859	0.791	0.718	0.607	0.450	0.302	0.208	0.126	0.082	0.044	0.016	0.006	0.046
14	1.000	0.919	0.827	0.757	0.653	0.494	0.348	0.246	0.163	0.111	0.059	0.021	0.010	0.052
15	0.919	1.000	0.898	0.789	0.682	0.526	0.374	0.270	0.184	0.122	0.072	0.038	0.014	0.043
16	0.827	0.898	1.000	0.849	0.685	0.532	0.388	0.286	0.191	0.137	0.095	0.051	0.030	0.061
17	0.757	0.789	0.849	1.000	0.760	0.538	0.394	0.306	0.220	0.153	0.094	0.058	0.046	0.067
18	0.653	0.682	0.685	0.760	1.000	0.676	0.454	0.365	0.285	0.215	0.147	0.103	0.077	0.077
19	0.494	0.526	0.532	0.538	0.676	1.000	0.642	0.411	0.314	0.251	0.173	0.132	0.122	0.096
20	0.348	0.374	0.388	0.394	0.454	0.642	1.000	0.637	0.379	0.245	0.167	0.134	0.131	0.102
21	0.246	0.270	0.286	0.306	0.365	0.411	0.637	1.000	0.639	0.315	0.206	0.174	0.129	0.088
22	0.163	0.184	0.191	0.220	0.285	0.314	0.379	0.639	1.000	0.617	0.343	0.223	0.141	0.086
23	0.111	0.122	0.137	0.153	0.215	0.251	0.245	0.315	0.617	1.000	0.630	0.323	0.188	0.126
24	0.059	0.072	0.095	0.094	0.147	0.173	0.167	0.206	0.343	0.630	1.000	0.636	0.364	0.215
25	0.021	0.038	0.051	0.058	0.103	0.132	0.134	0.174	0.223	0.323	0.636	1.000	0.695	0.419
26	0.010	0.014	0.030	0.046	0.077	0.122	0.131	0.129	0.141	0.188	0.364	0.695	1.000	0.677
27	0.052	0.043	0.061	0.067	0.077	0.096	0.102	0.088	0.086	0.126	0.215	0.419	0.677	1.000

TABLE VI.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN MERIDIONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(i) September

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.670	0.407	0.306	0.260	0.213	0.158	0.095	0.033	-0.020	-0.079	-0.129	-0.154	-0.174
1	0.670	1.000	0.722	0.568	0.502	0.436	0.372	0.293	0.204	0.135	0.056	0.006	-0.030	-0.061
2	0.407	0.722	1.000	0.819	0.704	0.624	0.573	0.512	0.434	0.362	0.287	0.237	0.197	0.160
3	0.306	0.568	0.819	1.000	0.866	0.772	0.719	0.670	0.600	0.533	0.459	0.403	0.354	0.312
4	0.260	0.502	0.704	0.866	1.000	0.900	0.833	0.781	0.717	0.654	0.582	0.521	0.466	0.424
5	0.213	0.436	0.624	0.772	0.900	1.000	0.912	0.845	0.781	0.723	0.654	0.596	0.540	0.506
6	0.158	0.372	0.573	0.719	0.833	0.912	1.000	0.923	0.853	0.792	0.723	0.661	0.605	0.568
7	0.095	0.293	0.512	0.670	0.781	0.845	0.923	1.000	0.936	0.867	0.799	0.744	0.686	0.648
8	0.033	0.204	0.434	0.600	0.717	0.781	0.853	0.936	1.000	0.945	0.881	0.823	0.761	0.718
9	-0.020	0.135	0.362	0.533	0.654	0.723	0.792	0.867	0.945	1.000	0.950	0.890	0.826	0.776
10	-0.079	0.056	0.287	0.459	0.582	0.654	0.723	0.799	0.881	0.950	1.000	0.956	0.892	0.832
11	-0.129	0.006	0.237	0.403	0.521	0.596	0.661	0.744	0.823	0.890	0.956	1.000	0.952	0.889
12	-0.154	-0.030	0.197	0.354	0.466	0.540	0.605	0.686	0.761	0.826	0.892	0.952	1.000	0.944
13	-0.174	-0.061	0.160	0.312	0.424	0.506	0.568	0.648	0.718	0.776	0.832	0.889	0.944	1.000
14	-0.164	-0.065	0.158	0.313	0.424	0.504	0.568	0.642	0.706	0.755	0.801	0.841	0.881	0.929
15	-0.124	-0.039	0.186	0.338	0.447	0.526	0.581	0.650	0.709	0.749	0.784	0.809	0.836	0.865
16	-0.092	-0.016	0.211	0.355	0.460	0.537	0.586	0.640	0.686	0.716	0.739	0.756	0.775	0.805
17	-0.063	0.002	0.215	0.356	0.432	0.499	0.545	0.601	0.646	0.671	0.684	0.693	0.706	0.731
18	-0.025	0.016	0.194	0.315	0.379	0.441	0.493	0.538	0.585	0.609	0.615	0.616	0.622	0.646
19	0.016	0.036	0.167	0.269	0.324	0.373	0.419	0.454	0.489	0.520	0.528	0.526	0.541	0.548
20	-0.008	0.016	0.120	0.191	0.226	0.279	0.318	0.344	0.375	0.399	0.416	0.417	0.434	0.437
21	-0.063	-0.022	0.046	0.121	0.151	0.196	0.225	0.249	0.269	0.283	0.294	0.304	0.315	0.334
22	-0.077	-0.030	0.028	0.098	0.107	0.122	0.145	0.169	0.181	0.192	0.204	0.213	0.226	0.235
23	-0.083	-0.049	0.007	0.060	0.078	0.098	0.114	0.136	0.159	0.159	0.165	0.173	0.176	0.173
24	-0.064	-0.049	-0.003	0.033	0.062	0.087	0.089	0.103	0.122	0.124	0.124	0.124	0.129	0.132
25	-0.086	-0.069	-0.024	0.014	0.041	0.057	0.056	0.063	0.082	0.089	0.096	0.094	0.095	0.096
26	-0.048	-0.047	-0.016	0.016	0.035	0.048	0.053	0.060	0.061	0.058	0.059	0.049	0.048	0.043
27	-0.035	-0.019	0.011	0.055	0.053	0.074	0.080	0.079	0.068	0.067	0.066	0.061	0.061	0.054

(i) September – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.164	-0.124	-0.092	-0.063	-0.025	0.016	-0.008	-0.063	-0.077	-0.083	-0.064	-0.086	-0.048	-0.035
1	-0.065	-0.039	-0.016	0.002	0.016	0.036	0.016	-0.022	-0.030	-0.049	-0.049	-0.069	-0.047	-0.019
2	0.158	0.186	0.211	0.215	0.194	0.167	0.120	0.046	0.028	0.007	-0.003	-0.024	-0.016	0.011
3	0.313	0.338	0.355	0.356	0.315	0.269	0.191	0.121	0.098	0.060	0.033	0.014	0.016	0.055
4	0.424	0.447	0.460	0.432	0.379	0.324	0.226	0.151	0.107	0.078	0.062	0.041	0.035	0.053
5	0.504	0.526	0.537	0.499	0.441	0.373	0.279	0.196	0.122	0.098	0.087	0.057	0.048	0.074
6	0.568	0.581	0.586	0.545	0.493	0.419	0.318	0.225	0.145	0.114	0.089	0.056	0.053	0.080
7	0.642	0.650	0.640	0.601	0.538	0.454	0.344	0.249	0.169	0.136	0.103	0.063	0.060	0.079
8	0.706	0.709	0.686	0.646	0.585	0.489	0.375	0.269	0.181	0.159	0.122	0.082	0.061	0.068
9	0.755	0.749	0.716	0.671	0.609	0.520	0.399	0.283	0.192	0.159	0.124	0.089	0.058	0.067
10	0.801	0.784	0.739	0.684	0.615	0.528	0.416	0.294	0.204	0.165	0.124	0.096	0.059	0.066
11	0.841	0.809	0.756	0.693	0.616	0.526	0.417	0.304	0.213	0.173	0.124	0.094	0.049	0.061
12	0.881	0.836	0.775	0.706	0.622	0.541	0.434	0.315	0.226	0.176	0.129	0.095	0.048	0.061
13	0.929	0.865	0.805	0.731	0.646	0.548	0.437	0.334	0.235	0.173	0.132	0.096	0.043	0.054
14	1.000	0.925	0.847	0.770	0.684	0.582	0.456	0.350	0.242	0.170	0.114	0.069	0.031	0.043
15	0.925	1.000	0.912	0.811	0.731	0.622	0.498	0.383	0.258	0.158	0.107	0.061	0.020	0.030
16	0.847	0.912	1.000	0.886	0.777	0.661	0.513	0.397	0.266	0.161	0.102	0.060	0.014	0.020
17	0.770	0.811	0.886	1.000	0.840	0.662	0.523	0.409	0.290	0.191	0.114	0.082	0.020	0.009
18	0.684	0.731	0.777	0.840	1.000	0.760	0.549	0.423	0.309	0.202	0.133	0.113	0.055	0.030
19	0.582	0.622	0.661	0.662	0.760	1.000	0.706	0.460	0.330	0.258	0.208	0.161	0.100	0.064
20	0.456	0.498	0.513	0.523	0.549	0.706	1.000	0.654	0.376	0.294	0.250	0.203	0.158	0.106
21	0.350	0.383	0.397	0.409	0.423	0.460	0.654	1.000	0.629	0.387	0.284	0.259	0.195	0.138
22	0.242	0.258	0.266	0.290	0.309	0.330	0.376	0.629	1.000	0.643	0.371	0.309	0.239	0.175
23	0.170	0.158	0.161	0.191	0.202	0.258	0.294	0.387	0.643	1.000	0.640	0.413	0.299	0.193
24	0.114	0.107	0.102	0.114	0.133	0.208	0.250	0.284	0.371	0.640	1.000	0.640	0.373	0.247
25	0.069	0.061	0.060	0.082	0.113	0.161	0.203	0.259	0.309	0.413	0.640	1.000	0.687	0.401
26	0.031	0.020	0.014	0.020	0.055	0.100	0.158	0.195	0.239	0.299	0.373	0.687	1.000	0.712
27	0.043	0.030	0.020	0.009	0.030	0.064	0.106	0.138	0.175	0.193	0.247	0.401	0.712	1.000

TABLE VI.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN MERIDIONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(j) October

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.643	0.362	0.250	0.182	0.136	0.091	0.048	0.006	-0.031	-0.080	-0.128	-0.145	-0.154
1	0.643	1.000	0.729	0.566	0.472	0.408	0.339	0.285	0.227	0.184	0.130	0.079	0.036	-0.009
2	0.362	0.729	1.000	0.851	0.748	0.677	0.615	0.557	0.503	0.467	0.417	0.366	0.322	0.271
3	0.250	0.566	0.851	1.000	0.898	0.830	0.773	0.729	0.684	0.648	0.593	0.543	0.504	0.453
4	0.182	0.472	0.748	0.898	1.000	0.921	0.865	0.827	0.781	0.742	0.683	0.630	0.592	0.548
5	0.136	0.408	0.677	0.830	0.921	1.000	0.948	0.908	0.865	0.817	0.755	0.701	0.661	0.619
6	0.091	0.339	0.615	0.773	0.865	0.948	1.000	0.956	0.913	0.862	0.799	0.740	0.701	0.666
7	0.048	0.285	0.557	0.729	0.827	0.908	0.956	1.000	0.961	0.912	0.847	0.788	0.748	0.711
8	0.006	0.227	0.503	0.684	0.781	0.865	0.913	0.961	1.000	0.960	0.899	0.839	0.798	0.759
9	-0.031	0.184	0.467	0.648	0.742	0.817	0.862	0.912	0.960	1.000	0.956	0.900	0.851	0.802
10	-0.080	0.130	0.417	0.593	0.683	0.755	0.799	0.847	0.899	0.956	1.000	0.959	0.904	0.845
11	-0.128	0.079	0.366	0.543	0.630	0.701	0.740	0.788	0.839	0.900	0.959	1.000	0.951	0.885
12	-0.145	0.036	0.322	0.504	0.592	0.661	0.701	0.748	0.798	0.851	0.904	0.951	1.000	0.938
13	-0.154	-0.009	0.271	0.453	0.548	0.619	0.666	0.711	0.759	0.802	0.845	0.885	0.938	1.000
14	-0.148	-0.020	0.262	0.444	0.537	0.603	0.648	0.684	0.725	0.761	0.790	0.820	0.869	0.931
15	-0.146	-0.022	0.245	0.419	0.511	0.574	0.613	0.649	0.686	0.715	0.741	0.771	0.821	0.881
16	-0.149	-0.037	0.224	0.395	0.480	0.542	0.580	0.612	0.646	0.669	0.684	0.708	0.752	0.817
17	-0.132	-0.045	0.193	0.353	0.437	0.487	0.522	0.552	0.584	0.602	0.609	0.633	0.678	0.744
18	-0.122	-0.066	0.149	0.293	0.374	0.417	0.451	0.475	0.502	0.511	0.515	0.533	0.572	0.637
19	-0.114	-0.087	0.088	0.216	0.281	0.314	0.352	0.373	0.396	0.403	0.401	0.413	0.445	0.513
20	-0.082	-0.081	0.046	0.151	0.211	0.224	0.255	0.277	0.292	0.289	0.286	0.300	0.318	0.374
21	-0.028	-0.059	0.018	0.096	0.143	0.160	0.187	0.204	0.223	0.210	0.199	0.202	0.222	0.264
22	-0.016	-0.068	-0.016	0.043	0.079	0.096	0.121	0.137	0.161	0.153	0.139	0.135	0.158	0.197
23	-0.003	-0.060	-0.022	0.031	0.073	0.093	0.115	0.131	0.146	0.136	0.119	0.112	0.119	0.151
24	0.022	-0.033	-0.004	0.015	0.058	0.073	0.090	0.102	0.105	0.095	0.083	0.071	0.073	0.089
25	0.028	-0.048	-0.026	0.002	0.031	0.046	0.061	0.072	0.075	0.070	0.056	0.049	0.049	0.058
26	0.040	-0.039	-0.012	0.018	0.035	0.052	0.063	0.065	0.068	0.066	0.055	0.049	0.042	0.052
27	0.035	-0.031	-0.012	0.015	0.029	0.048	0.054	0.055	0.058	0.055	0.055	0.052	0.040	0.038

(j) October – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.148	-0.146	-0.149	-0.132	-0.122	-0.114	-0.082	-0.028	-0.016	-0.003	0.022	0.028	0.040	0.035
1	-0.020	-0.022	-0.037	-0.045	-0.066	-0.087	-0.081	-0.059	-0.068	-0.060	-0.033	-0.048	-0.039	-0.031
2	0.262	0.245	0.224	0.193	0.149	0.088	0.046	0.018	-0.016	-0.022	-0.004	-0.026	-0.012	-0.012
3	0.444	0.419	0.395	0.353	0.293	0.216	0.151	0.096	0.043	0.031	0.015	0.002	0.018	0.015
4	0.537	0.511	0.480	0.437	0.374	0.281	0.211	0.143	0.079	0.073	0.058	0.031	0.035	0.029
5	0.603	0.574	0.542	0.487	0.417	0.314	0.224	0.160	0.096	0.093	0.073	0.046	0.052	0.048
6	0.648	0.613	0.580	0.522	0.451	0.352	0.255	0.187	0.121	0.115	0.090	0.061	0.063	0.054
7	0.684	0.649	0.612	0.552	0.475	0.373	0.277	0.204	0.137	0.131	0.102	0.072	0.065	0.055
8	0.725	0.686	0.646	0.584	0.502	0.396	0.292	0.223	0.161	0.146	0.105	0.075	0.068	0.058
9	0.761	0.715	0.669	0.602	0.511	0.403	0.289	0.210	0.153	0.136	0.095	0.070	0.066	0.055
10	0.790	0.741	0.684	0.609	0.515	0.401	0.286	0.199	0.139	0.119	0.083	0.056	0.055	0.055
11	0.820	0.771	0.708	0.633	0.533	0.413	0.300	0.202	0.135	0.112	0.071	0.049	0.049	0.052
12	0.869	0.821	0.752	0.678	0.572	0.445	0.318	0.222	0.158	0.119	0.073	0.049	0.042	0.040
13	0.931	0.881	0.817	0.744	0.637	0.513	0.374	0.264	0.197	0.151	0.089	0.058	0.052	0.038
14	1.000	0.936	0.865	0.793	0.688	0.564	0.427	0.304	0.235	0.174	0.100	0.067	0.068	0.046
15	0.936	1.000	0.922	0.844	0.746	0.631	0.488	0.361	0.270	0.201	0.122	0.084	0.078	0.044
16	0.865	0.922	1.000	0.907	0.799	0.691	0.544	0.422	0.330	0.243	0.157	0.113	0.102	0.070
17	0.793	0.844	0.907	1.000	0.875	0.731	0.590	0.486	0.395	0.302	0.200	0.147	0.138	0.089
18	0.688	0.746	0.799	0.875	1.000	0.828	0.637	0.546	0.468	0.373	0.272	0.211	0.189	0.132
19	0.564	0.631	0.691	0.731	0.828	1.000	0.776	0.612	0.541	0.468	0.381	0.307	0.260	0.188
20	0.427	0.488	0.544	0.590	0.637	0.776	1.000	0.751	0.583	0.511	0.436	0.375	0.326	0.256
21	0.304	0.361	0.422	0.486	0.546	0.612	0.751	1.000	0.779	0.612	0.527	0.464	0.398	0.332
22	0.235	0.270	0.330	0.395	0.468	0.541	0.583	0.779	1.000	0.773	0.577	0.505	0.445	0.371
23	0.174	0.201	0.243	0.302	0.373	0.468	0.511	0.612	0.773	1.000	0.759	0.580	0.495	0.420
24	0.100	0.122	0.157	0.200	0.272	0.381	0.436	0.527	0.577	0.759	1.000	0.770	0.581	0.476
25	0.067	0.084	0.113	0.147	0.211	0.307	0.375	0.464	0.505	0.580	0.770	1.000	0.788	0.604
26	0.068	0.078	0.102	0.138	0.189	0.260	0.326	0.398	0.445	0.495	0.581	0.788	1.000	0.819
27	0.046	0.044	0.070	0.089	0.132	0.188	0.256	0.332	0.371	0.420	0.476	0.604	0.819	1.000

TABLE VI.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN MERIDIONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(k) November

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.708	0.473	0.364	0.280	0.231	0.191	0.155	0.109	0.081	0.048	0.016	-0.003	-0.019
1	0.708	1.000	0.780	0.627	0.530	0.458	0.399	0.354	0.304	0.272	0.237	0.198	0.176	0.149
2	0.473	0.780	1.000	0.875	0.779	0.718	0.669	0.629	0.588	0.559	0.525	0.485	0.457	0.427
3	0.364	0.627	0.875	1.000	0.927	0.871	0.826	0.790	0.756	0.731	0.697	0.659	0.626	0.599
4	0.280	0.530	0.779	0.927	1.000	0.947	0.903	0.866	0.836	0.812	0.777	0.737	0.700	0.673
5	0.231	0.458	0.718	0.871	0.947	1.000	0.959	0.925	0.894	0.865	0.827	0.787	0.749	0.719
6	0.191	0.399	0.669	0.826	0.903	0.959	1.000	0.968	0.935	0.903	0.864	0.822	0.783	0.752
7	0.155	0.354	0.629	0.790	0.866	0.925	0.968	1.000	0.971	0.937	0.897	0.854	0.812	0.779
8	0.109	0.304	0.588	0.756	0.836	0.894	0.935	0.971	1.000	0.970	0.931	0.885	0.841	0.807
9	0.081	0.272	0.559	0.731	0.812	0.865	0.903	0.937	0.970	1.000	0.969	0.926	0.878	0.838
10	0.048	0.237	0.525	0.697	0.777	0.827	0.864	0.897	0.931	0.969	1.000	0.965	0.918	0.874
11	0.016	0.198	0.485	0.659	0.737	0.787	0.822	0.854	0.885	0.926	0.965	1.000	0.958	0.910
12	-0.003	0.176	0.457	0.626	0.700	0.749	0.783	0.812	0.841	0.878	0.918	0.958	1.000	0.951
13	-0.019	0.149	0.427	0.599	0.673	0.719	0.752	0.779	0.807	0.838	0.874	0.910	0.951	1.000
14	-0.024	0.138	0.407	0.582	0.652	0.696	0.726	0.754	0.780	0.811	0.843	0.873	0.903	0.939
15	-0.015	0.142	0.398	0.565	0.634	0.672	0.698	0.727	0.750	0.780	0.810	0.840	0.869	0.893
16	-0.046	0.104	0.357	0.520	0.590	0.631	0.659	0.689	0.710	0.737	0.767	0.800	0.836	0.868
17	-0.050	0.081	0.313	0.466	0.532	0.575	0.601	0.631	0.657	0.680	0.710	0.742	0.776	0.816
18	-0.069	0.048	0.253	0.392	0.456	0.497	0.521	0.555	0.584	0.602	0.628	0.659	0.696	0.745
19	-0.090	0.004	0.179	0.305	0.366	0.398	0.420	0.453	0.482	0.493	0.514	0.545	0.587	0.639
20	-0.095	-0.034	0.119	0.222	0.282	0.312	0.335	0.364	0.391	0.402	0.424	0.450	0.490	0.531
21	-0.066	-0.025	0.094	0.180	0.230	0.252	0.273	0.296	0.317	0.323	0.342	0.361	0.396	0.439
22	-0.037	-0.005	0.079	0.140	0.181	0.191	0.201	0.216	0.232	0.231	0.248	0.263	0.294	0.328
23	0.009	0.038	0.097	0.133	0.170	0.171	0.176	0.190	0.202	0.197	0.211	0.221	0.249	0.275
24	0.026	0.044	0.090	0.120	0.154	0.147	0.152	0.163	0.169	0.169	0.176	0.179	0.200	0.219
25	0.049	0.068	0.100	0.116	0.139	0.128	0.123	0.128	0.130	0.128	0.133	0.137	0.156	0.179
26	0.044	0.062	0.099	0.104	0.123	0.109	0.107	0.113	0.114	0.109	0.117	0.117	0.133	0.158
27	0.028	0.055	0.090	0.096	0.112	0.095	0.094	0.104	0.105	0.100	0.115	0.114	0.131	0.151

(k) November – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.024	-0.015	-0.046	-0.050	-0.069	-0.090	-0.095	-0.066	-0.037	0.009	0.026	0.049	0.044	0.028
1	0.138	0.142	0.104	0.081	0.048	0.004	-0.034	-0.025	-0.005	0.038	0.044	0.068	0.062	0.055
2	0.407	0.398	0.357	0.313	0.253	0.179	0.119	0.094	0.079	0.097	0.090	0.100	0.099	0.090
3	0.582	0.565	0.520	0.466	0.392	0.305	0.222	0.180	0.140	0.133	0.120	0.116	0.104	0.096
4	0.652	0.634	0.590	0.532	0.456	0.366	0.282	0.230	0.181	0.170	0.154	0.139	0.123	0.112
5	0.696	0.672	0.631	0.575	0.497	0.398	0.312	0.252	0.191	0.171	0.147	0.128	0.109	0.095
6	0.726	0.698	0.659	0.601	0.521	0.420	0.335	0.273	0.201	0.176	0.152	0.123	0.107	0.094
7	0.754	0.727	0.689	0.631	0.555	0.453	0.364	0.296	0.216	0.190	0.163	0.128	0.113	0.104
8	0.780	0.750	0.710	0.657	0.584	0.482	0.391	0.317	0.232	0.202	0.169	0.130	0.114	0.105
9	0.811	0.780	0.737	0.680	0.602	0.493	0.402	0.323	0.231	0.197	0.169	0.128	0.109	0.100
10	0.843	0.810	0.767	0.710	0.628	0.514	0.424	0.342	0.248	0.211	0.176	0.133	0.117	0.115
11	0.873	0.840	0.800	0.742	0.659	0.545	0.450	0.361	0.263	0.221	0.179	0.137	0.117	0.114
12	0.903	0.869	0.836	0.776	0.696	0.587	0.490	0.396	0.294	0.249	0.200	0.156	0.133	0.131
13	0.939	0.893	0.868	0.816	0.745	0.639	0.531	0.439	0.328	0.275	0.219	0.179	0.158	0.151
14	1.000	0.937	0.890	0.845	0.779	0.683	0.569	0.468	0.352	0.294	0.243	0.192	0.171	0.159
15	0.937	1.000	0.939	0.871	0.811	0.717	0.602	0.493	0.376	0.312	0.252	0.202	0.180	0.166
16	0.890	0.939	1.000	0.915	0.829	0.745	0.645	0.539	0.427	0.353	0.281	0.228	0.203	0.186
17	0.845	0.871	0.915	1.000	0.885	0.779	0.700	0.599	0.490	0.412	0.335	0.283	0.245	0.222
18	0.779	0.811	0.829	0.885	1.000	0.853	0.742	0.653	0.547	0.474	0.388	0.333	0.286	0.256
19	0.683	0.717	0.745	0.779	0.853	1.000	0.846	0.719	0.632	0.567	0.489	0.431	0.374	0.328
20	0.569	0.602	0.645	0.700	0.742	0.846	1.000	0.841	0.718	0.656	0.585	0.526	0.467	0.420
21	0.468	0.493	0.539	0.599	0.653	0.719	0.841	1.000	0.843	0.743	0.679	0.625	0.556	0.489
22	0.352	0.376	0.427	0.490	0.547	0.632	0.718	0.843	1.000	0.855	0.731	0.683	0.609	0.533
23	0.294	0.312	0.353	0.412	0.474	0.567	0.656	0.743	0.855	1.000	0.867	0.757	0.675	0.604
24	0.243	0.252	0.281	0.335	0.388	0.489	0.585	0.679	0.731	0.867	1.000	0.876	0.766	0.688
25	0.192	0.202	0.228	0.283	0.333	0.431	0.526	0.625	0.683	0.757	0.876	1.000	0.894	0.778
26	0.171	0.180	0.203	0.245	0.286	0.374	0.467	0.556	0.609	0.675	0.766	0.894	1.000	0.888
27	0.159	0.166	0.186	0.222	0.256	0.328	0.420	0.489	0.533	0.604	0.688	0.778	0.888	1.000

TABLE VI.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN MERIDIONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(l) December

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.640	0.443	0.338	0.263	0.186	0.122	0.071	0.034	0.005	-0.032	-0.045	-0.044	-0.053
1	0.640	1.000	0.780	0.620	0.510	0.413	0.333	0.275	0.240	0.207	0.170	0.141	0.127	0.094
2	0.443	0.780	1.000	0.866	0.758	0.673	0.608	0.555	0.521	0.485	0.440	0.402	0.379	0.335
3	0.338	0.620	0.866	1.000	0.913	0.837	0.777	0.729	0.699	0.666	0.620	0.577	0.554	0.515
4	0.263	0.510	0.758	0.913	1.000	0.935	0.878	0.835	0.801	0.768	0.724	0.685	0.656	0.617
5	0.186	0.413	0.673	0.837	0.935	1.000	0.950	0.905	0.869	0.834	0.792	0.756	0.722	0.686
6	0.122	0.333	0.608	0.777	0.878	0.950	1.000	0.963	0.925	0.889	0.847	0.805	0.769	0.735
7	0.071	0.275	0.555	0.729	0.835	0.905	0.963	1.000	0.968	0.933	0.891	0.845	0.803	0.767
8	0.034	0.240	0.521	0.699	0.801	0.869	0.925	0.968	1.000	0.970	0.929	0.883	0.837	0.797
9	0.005	0.207	0.485	0.666	0.768	0.834	0.889	0.933	0.970	1.000	0.965	0.921	0.870	0.831
10	-0.032	0.170	0.440	0.620	0.724	0.792	0.847	0.891	0.929	0.965	1.000	0.961	0.911	0.868
11	-0.045	0.141	0.402	0.577	0.685	0.756	0.805	0.845	0.883	0.921	0.961	1.000	0.952	0.902
12	-0.044	0.127	0.379	0.554	0.656	0.722	0.769	0.803	0.837	0.870	0.911	0.952	1.000	0.943
13	-0.053	0.094	0.335	0.515	0.617	0.686	0.735	0.767	0.797	0.831	0.868	0.902	0.943	1.000
14	-0.067	0.071	0.312	0.490	0.588	0.656	0.698	0.728	0.756	0.788	0.823	0.856	0.889	0.930
15	-0.076	0.055	0.287	0.464	0.562	0.625	0.663	0.690	0.721	0.750	0.783	0.812	0.848	0.885
16	-0.067	0.066	0.283	0.445	0.535	0.595	0.630	0.658	0.689	0.717	0.749	0.778	0.810	0.844
17	-0.071	0.053	0.250	0.401	0.486	0.549	0.582	0.606	0.635	0.655	0.687	0.715	0.745	0.779
18	-0.064	0.043	0.223	0.361	0.442	0.494	0.525	0.545	0.573	0.590	0.621	0.647	0.675	0.720
19	-0.055	0.035	0.189	0.316	0.387	0.435	0.469	0.491	0.515	0.528	0.555	0.578	0.606	0.654
20	-0.076	0.001	0.140	0.259	0.328	0.362	0.399	0.419	0.437	0.448	0.470	0.487	0.507	0.549
21	-0.071	-0.001	0.131	0.233	0.287	0.313	0.343	0.357	0.372	0.375	0.398	0.411	0.423	0.462
22	-0.040	0.016	0.108	0.179	0.220	0.238	0.262	0.272	0.285	0.281	0.299	0.309	0.319	0.345
23	-0.033	0.014	0.084	0.142	0.170	0.181	0.205	0.211	0.225	0.222	0.233	0.240	0.242	0.260
24	-0.021	0.001	0.057	0.101	0.126	0.128	0.148	0.155	0.167	0.170	0.184	0.191	0.193	0.210
25	-0.021	0.014	0.064	0.105	0.120	0.116	0.132	0.143	0.158	0.163	0.177	0.176	0.174	0.188
26	-0.026	0.017	0.060	0.096	0.111	0.104	0.115	0.125	0.139	0.149	0.165	0.169	0.163	0.177
27	-0.029	0.014	0.045	0.072	0.085	0.079	0.085	0.092	0.107	0.121	0.134	0.135	0.128	0.136

(l) December – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.067	-0.076	-0.067	-0.071	-0.064	-0.055	-0.076	-0.071	-0.040	-0.033	-0.021	-0.021	-0.026	-0.029
1	0.071	0.055	0.066	0.053	0.043	0.035	0.001	-0.001	0.016	0.014	0.001	0.014	0.017	0.014
2	0.312	0.287	0.283	0.250	0.223	0.189	0.140	0.131	0.108	0.084	0.057	0.064	0.060	0.045
3	0.490	0.464	0.445	0.401	0.361	0.316	0.259	0.233	0.179	0.142	0.101	0.105	0.096	0.072
4	0.588	0.562	0.535	0.486	0.442	0.387	0.328	0.287	0.220	0.170	0.126	0.120	0.111	0.085
5	0.656	0.625	0.595	0.549	0.494	0.435	0.362	0.313	0.238	0.181	0.128	0.116	0.104	0.079
6	0.698	0.663	0.630	0.582	0.525	0.469	0.399	0.343	0.262	0.205	0.148	0.132	0.115	0.085
7	0.728	0.690	0.658	0.606	0.545	0.491	0.419	0.357	0.272	0.211	0.155	0.143	0.125	0.092
8	0.756	0.721	0.689	0.635	0.573	0.515	0.437	0.372	0.285	0.225	0.167	0.158	0.139	0.107
9	0.788	0.750	0.717	0.655	0.590	0.528	0.448	0.375	0.281	0.222	0.170	0.163	0.149	0.121
10	0.823	0.783	0.749	0.687	0.621	0.555	0.470	0.398	0.299	0.233	0.184	0.177	0.165	0.134
11	0.856	0.812	0.778	0.715	0.647	0.578	0.487	0.411	0.309	0.240	0.191	0.176	0.169	0.135
12	0.889	0.848	0.810	0.745	0.675	0.606	0.507	0.423	0.319	0.242	0.193	0.174	0.163	0.128
13	0.930	0.885	0.844	0.779	0.720	0.654	0.549	0.462	0.345	0.260	0.210	0.188	0.177	0.136
14	1.000	0.932	0.873	0.813	0.756	0.693	0.594	0.502	0.377	0.289	0.233	0.216	0.200	0.156
15	0.932	1.000	0.926	0.852	0.798	0.736	0.635	0.542	0.420	0.330	0.271	0.255	0.232	0.187
16	0.873	0.926	1.000	0.910	0.825	0.761	0.654	0.564	0.447	0.358	0.308	0.293	0.269	0.218
17	0.813	0.852	0.910	1.000	0.894	0.787	0.681	0.600	0.489	0.390	0.337	0.317	0.286	0.241
18	0.756	0.798	0.825	0.894	1.000	0.875	0.740	0.653	0.551	0.458	0.406	0.376	0.344	0.295
19	0.693	0.736	0.761	0.787	0.875	1.000	0.828	0.689	0.594	0.502	0.455	0.426	0.391	0.329
20	0.594	0.635	0.654	0.681	0.740	0.828	1.000	0.824	0.687	0.602	0.560	0.523	0.496	0.436
21	0.502	0.542	0.564	0.600	0.653	0.689	0.824	1.000	0.831	0.717	0.652	0.615	0.583	0.517
22	0.377	0.420	0.447	0.489	0.551	0.594	0.687	0.831	1.000	0.845	0.738	0.677	0.633	0.574
23	0.289	0.330	0.358	0.390	0.458	0.502	0.602	0.717	0.845	1.000	0.869	0.767	0.710	0.638
24	0.233	0.271	0.308	0.337	0.406	0.455	0.560	0.652	0.738	0.869	1.000	0.879	0.787	0.705
25	0.216	0.255	0.293	0.317	0.376	0.426	0.523	0.615	0.677	0.767	0.879	1.000	0.896	0.794
26	0.200	0.232	0.269	0.286	0.344	0.391	0.496	0.583	0.633	0.710	0.787	0.896	1.000	0.901
27	0.156	0.187	0.218	0.241	0.295	0.329	0.436	0.517	0.574	0.638	0.705	0.794	0.901	1.000

TABLE VI.- INTERLEVEL CORRELATION COEFFICIENTS BETWEEN MERIDIONAL COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Concluded

(m) Annual

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	1.000	0.651	0.413	0.321	0.269	0.221	0.174	0.126	0.082	0.045	0.007	-0.021	-0.040	-0.054
1	0.651	1.000	0.742	0.583	0.504	0.441	0.378	0.321	0.268	0.222	0.176	0.142	0.114	0.082
2	0.413	0.742	1.000	0.842	0.742	0.676	0.618	0.565	0.517	0.471	0.423	0.385	0.353	0.320
3	0.321	0.583	0.842	1.000	0.895	0.819	0.764	0.716	0.672	0.629	0.582	0.542	0.508	0.475
4	0.269	0.504	0.742	0.895	1.000	0.920	0.861	0.814	0.770	0.725	0.677	0.635	0.600	0.569
5	0.221	0.441	0.676	0.819	0.920	1.000	0.935	0.883	0.838	0.791	0.741	0.698	0.660	0.631
6	0.174	0.378	0.618	0.764	0.861	0.935	1.000	0.946	0.897	0.849	0.797	0.750	0.710	0.681
7	0.126	0.321	0.565	0.716	0.814	0.883	0.946	1.000	0.954	0.905	0.851	0.802	0.760	0.728
8	0.082	0.268	0.517	0.672	0.770	0.838	0.897	0.954	1.000	0.958	0.905	0.855	0.810	0.774
9	0.045	0.222	0.471	0.629	0.725	0.791	0.849	0.905	0.958	1.000	0.958	0.907	0.857	0.813
10	0.007	0.176	0.423	0.582	0.677	0.741	0.797	0.851	0.905	0.958	1.000	0.958	0.904	0.851
11	-0.021	0.142	0.385	0.542	0.635	0.698	0.750	0.802	0.855	0.907	0.958	1.000	0.951	0.888
12	-0.040	0.114	0.353	0.508	0.600	0.660	0.710	0.760	0.810	0.857	0.904	0.951	1.000	0.937
13	-0.054	0.082	0.320	0.475	0.569	0.631	0.681	0.728	0.774	0.813	0.851	0.888	0.937	1.000
14	-0.056	0.070	0.305	0.460	0.552	0.613	0.663	0.706	0.745	0.778	0.805	0.832	0.868	0.922
15	-0.051	0.067	0.296	0.447	0.540	0.599	0.645	0.683	0.716	0.742	0.765	0.788	0.822	0.863
16	-0.047	0.056	0.278	0.424	0.511	0.569	0.611	0.645	0.673	0.695	0.714	0.734	0.767	0.810
17	-0.048	0.045	0.246	0.383	0.460	0.514	0.551	0.585	0.612	0.629	0.644	0.665	0.699	0.745
18	-0.053	0.029	0.203	0.323	0.391	0.438	0.475	0.507	0.532	0.546	0.559	0.577	0.610	0.658
19	-0.055	0.010	0.153	0.253	0.316	0.357	0.391	0.419	0.439	0.450	0.460	0.476	0.507	0.555
20	-0.059	-0.008	0.107	0.188	0.237	0.270	0.300	0.324	0.339	0.347	0.357	0.370	0.394	0.434
21	-0.066	-0.027	0.068	0.130	0.168	0.195	0.220	0.238	0.249	0.253	0.260	0.270	0.289	0.326
22	-0.065	-0.035	0.039	0.083	0.110	0.131	0.150	0.164	0.171	0.171	0.176	0.183	0.200	0.229
23	-0.054	-0.033	0.029	0.064	0.084	0.101	0.115	0.124	0.130	0.126	0.127	0.133	0.145	0.168
24	-0.038	-0.032	0.019	0.044	0.060	0.074	0.083	0.089	0.092	0.088	0.088	0.091	0.100	0.119
25	-0.030	-0.025	0.014	0.035	0.043	0.051	0.057	0.061	0.063	0.061	0.061	0.063	0.070	0.086
26	-0.026	-0.016	0.015	0.034	0.040	0.043	0.047	0.052	0.051	0.049	0.051	0.051	0.055	0.068
27	-0.027	-0.011	0.018	0.037	0.046	0.052	0.056	0.059	0.060	0.057	0.060	0.060	0.063	0.070

(m) Annual – Concluded

Altitude level i, km	Interlevel correlation coefficient (nondimensional) for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.056	-0.051	-0.047	-0.048	-0.053	-0.055	-0.059	-0.066	-0.065	-0.054	-0.038	-0.030	-0.026	-0.027
1	0.070	0.067	0.056	0.045	0.029	0.010	-0.008	-0.027	-0.035	-0.033	-0.032	-0.025	-0.016	-0.011
2	0.305	0.296	0.278	0.246	0.203	0.153	0.107	0.068	0.039	0.029	0.019	0.014	0.015	0.018
3	0.460	0.447	0.424	0.383	0.323	0.253	0.188	0.130	0.083	0.064	0.044	0.035	0.034	0.037
4	0.552	0.540	0.511	0.460	0.391	0.316	0.237	0.168	0.110	0.084	0.060	0.043	0.040	0.046
5	0.613	0.599	0.569	0.514	0.438	0.357	0.270	0.195	0.131	0.101	0.074	0.051	0.043	0.052
6	0.663	0.645	0.611	0.551	0.475	0.391	0.300	0.220	0.150	0.115	0.083	0.057	0.047	0.056
7	0.706	0.683	0.645	0.585	0.507	0.419	0.324	0.238	0.164	0.124	0.089	0.061	0.052	0.059
8	0.745	0.716	0.673	0.612	0.532	0.439	0.339	0.249	0.171	0.130	0.092	0.063	0.051	0.060
9	0.778	0.742	0.695	0.629	0.546	0.450	0.347	0.253	0.171	0.126	0.088	0.061	0.049	0.057
10	0.805	0.765	0.714	0.644	0.559	0.460	0.357	0.260	0.176	0.127	0.088	0.061	0.051	0.060
11	0.832	0.788	0.734	0.665	0.577	0.476	0.370	0.270	0.183	0.133	0.091	0.063	0.051	0.060
12	0.868	0.822	0.767	0.699	0.610	0.507	0.394	0.289	0.200	0.145	0.100	0.070	0.055	0.063
13	0.922	0.863	0.810	0.745	0.658	0.555	0.434	0.326	0.229	0.168	0.119	0.086	0.068	0.070
14	1.000	0.920	0.849	0.786	0.705	0.602	0.479	0.367	0.262	0.192	0.137	0.098	0.081	0.080
15	0.920	1.000	0.914	0.826	0.747	0.647	0.521	0.406	0.295	0.219	0.157	0.116	0.096	0.090
16	0.849	0.914	1.000	0.888	0.775	0.680	0.555	0.441	0.327	0.248	0.184	0.140	0.115	0.107
17	0.786	0.826	0.888	1.000	0.850	0.710	0.589	0.476	0.364	0.283	0.212	0.167	0.137	0.123
18	0.705	0.747	0.775	0.850	1.000	0.808	0.634	0.522	0.412	0.327	0.253	0.204	0.169	0.147
19	0.602	0.647	0.680	0.710	0.808	1.000	0.762	0.574	0.465	0.384	0.317	0.260	0.222	0.187
20	0.479	0.521	0.555	0.589	0.634	0.762	1.000	0.740	0.539	0.443	0.377	0.324	0.284	0.240
21	0.367	0.406	0.441	0.476	0.522	0.574	0.740	1.000	0.738	0.543	0.447	0.391	0.341	0.294
22	0.262	0.295	0.327	0.364	0.412	0.465	0.539	0.738	1.000	0.746	0.549	0.463	0.405	0.350
23	0.192	0.219	0.248	0.283	0.327	0.384	0.443	0.543	0.746	1.000	0.756	0.567	0.479	0.411
24	0.137	0.157	0.184	0.212	0.253	0.317	0.377	0.447	0.549	0.756	1.000	0.768	0.591	0.488
25	0.098	0.116	0.140	0.167	0.204	0.260	0.324	0.391	0.463	0.567	0.768	1.000	0.797	0.611
26	0.081	0.096	0.115	0.137	0.169	0.222	0.284	0.341	0.405	0.479	0.591	0.797	1.000	0.806
27	0.080	0.090	0.107	0.123	0.147	0.187	0.240	0.294	0.350	0.411	0.488	0.611	0.806	1.000

TABLE VII.- CROSSLEVEL AND INTRALEVEL CORRELATION COEFFICIENTS BETWEEN COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE

[Sample includes observations made 4 times daily from 1956 to 1964 at Norfolk and Washington stations]

(a) January

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0.047	-0.320	-0.326	-0.254	-0.167	-0.116	-0.081	-0.072	-0.069	-0.071	-0.065	-0.056	-0.029	-0.012
1	0.450	0.162	-0.004	0.008	0.030	0.031	0.040	0.023	-0.001	-0.031	-0.059	-0.077	-0.084	-0.096
2	0.389	0.297	0.163	0.167	0.177	0.169	0.165	0.150	0.124	0.090	0.053	0.026	0.000	-0.017
3	0.266	0.233	0.164	0.174	0.199	0.197	0.201	0.189	0.172	0.151	0.115	0.089	0.062	0.048
4	0.177	0.162	0.131	0.158	0.184	0.195	0.205	0.202	0.185	0.167	0.139	0.120	0.099	0.085
5	0.118	0.124	0.119	0.152	0.178	0.196	0.213	0.212	0.202	0.183	0.152	0.132	0.111	0.097
6	0.093	0.105	0.104	0.139	0.163	0.178	0.198	0.204	0.196	0.178	0.146	0.125	0.107	0.089
7	0.082	0.103	0.110	0.140	0.164	0.176	0.192	0.199	0.195	0.180	0.146	0.123	0.105	0.085
8	0.074	0.109	0.123	0.148	0.164	0.178	0.192	0.198	0.197	0.185	0.149	0.126	0.107	0.083
9	0.081	0.121	0.138	0.158	0.170	0.178	0.188	0.192	0.190	0.178	0.147	0.123	0.101	0.078
10	0.082	0.144	0.161	0.180	0.183	0.184	0.188	0.190	0.185	0.177	0.152	0.128	0.100	0.079
11	0.098	0.203	0.212	0.220	0.211	0.202	0.200	0.196	0.192	0.185	0.169	0.141	0.105	0.078
12	0.120	0.259	0.258	0.257	0.238	0.220	0.215	0.212	0.206	0.202	0.183	0.159	0.127	0.087
13	0.120	0.266	0.261	0.251	0.226	0.203	0.199	0.198	0.194	0.192	0.174	0.151	0.131	0.096
14	0.118	0.257	0.243	0.231	0.202	0.184	0.181	0.179	0.177	0.175	0.156	0.133	0.116	0.103
15	0.122	0.252	0.236	0.218	0.189	0.174	0.170	0.164	0.159	0.156	0.138	0.117	0.097	0.088
16	0.118	0.245	0.232	0.221	0.189	0.172	0.167	0.161	0.153	0.148	0.132	0.117	0.101	0.089
17	0.097	0.224	0.218	0.215	0.179	0.171	0.170	0.165	0.155	0.151	0.142	0.131	0.114	0.102
18	0.088	0.194	0.179	0.177	0.145	0.137	0.136	0.134	0.128	0.126	0.122	0.110	0.088	0.079
19	0.082	0.164	0.145	0.144	0.110	0.099	0.098	0.098	0.091	0.089	0.084	0.074	0.056	0.039
20	0.061	0.123	0.122	0.124	0.101	0.095	0.100	0.096	0.085	0.082	0.073	0.060	0.049	0.035
21	0.019	0.066	0.070	0.074	0.063	0.058	0.070	0.068	0.060	0.055	0.048	0.039	0.031	0.022
22	0.011	0.048	0.074	0.082	0.064	0.061	0.077	0.074	0.065	0.062	0.053	0.046	0.038	0.030
23	0.022	0.033	0.065	0.070	0.053	0.051	0.066	0.063	0.056	0.055	0.042	0.039	0.032	0.029
24	0.006	-0.002	0.031	0.045	0.038	0.039	0.053	0.054	0.046	0.048	0.036	0.034	0.026	0.029
25	-0.016	-0.031	0.003	0.023	0.027	0.035	0.050	0.054	0.050	0.055	0.044	0.042	0.035	0.033
26	-0.019	-0.043	-0.007	0.016	0.022	0.031	0.048	0.051	0.053	0.059	0.051	0.049	0.046	0.033
27	-0.016	-0.045	-0.009	0.013	0.018	0.028	0.042	0.043	0.043	0.051	0.042	0.038	0.033	0.020

(a) January – Concluded

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.007	0.015	0.028	0.025	0.033	0.026	0.020	-0.003	-0.031	-0.041	-0.043	-0.048	-0.049	-0.045
1	-0.069	-0.051	-0.030	-0.014	0.024	0.034	0.039	0.029	0.036	0.041	0.045	0.044	0.056	0.057
2	0.004	0.013	0.034	0.051	0.086	0.098	0.087	0.081	0.092	0.116	0.124	0.126	0.131	0.129
3	0.050	0.048	0.066	0.086	0.118	0.130	0.113	0.112	0.123	0.137	0.134	0.132	0.138	0.132
4	0.076	0.076	0.089	0.107	0.135	0.145	0.125	0.123	0.131	0.143	0.140	0.138	0.142	0.137
5	0.082	0.081	0.097	0.121	0.155	0.165	0.145	0.150	0.159	0.166	0.157	0.153	0.161	0.154
6	0.076	0.075	0.094	0.121	0.161	0.172	0.152	0.154	0.161	0.167	0.157	0.155	0.163	0.154
7	0.074	0.077	0.091	0.115	0.154	0.165	0.147	0.144	0.148	0.153	0.146	0.152	0.159	0.151
8	0.077	0.082	0.091	0.108	0.146	0.160	0.142	0.138	0.140	0.145	0.136	0.147	0.151	0.144
9	0.075	0.080	0.090	0.105	0.141	0.153	0.133	0.127	0.126	0.135	0.128	0.137	0.137	0.126
10	0.075	0.078	0.093	0.110	0.138	0.148	0.126	0.122	0.117	0.126	0.125	0.136	0.136	0.123
11	0.072	0.078	0.095	0.109	0.133	0.140	0.120	0.118	0.117	0.135	0.134	0.140	0.141	0.124
12	0.080	0.086	0.112	0.121	0.146	0.156	0.137	0.131	0.133	0.160	0.163	0.168	0.167	0.152
13	0.076	0.078	0.116	0.125	0.147	0.156	0.146	0.154	0.161	0.182	0.181	0.190	0.187	0.169
14	0.095	0.077	0.116	0.142	0.166	0.173	0.167	0.186	0.199	0.216	0.210	0.222	0.218	0.198
15	0.097	0.081	0.108	0.134	0.173	0.183	0.173	0.196	0.205	0.232	0.222	0.224	0.228	0.216
16	0.098	0.091	0.123	0.135	0.177	0.198	0.188	0.209	0.218	0.241	0.231	0.235	0.241	0.226
17	0.106	0.097	0.141	0.153	0.177	0.206	0.192	0.217	0.220	0.239	0.225	0.238	0.247	0.232
18	0.078	0.067	0.105	0.140	0.167	0.189	0.184	0.220	0.231	0.256	0.241	0.253	0.272	0.255
19	0.037	0.034	0.069	0.108	0.144	0.160	0.166	0.200	0.225	0.256	0.254	0.256	0.276	0.265
20	0.032	0.031	0.062	0.083	0.122	0.143	0.162	0.192	0.204	0.236	0.244	0.239	0.258	0.253
21	0.026	0.004	0.034	0.051	0.085	0.118	0.151	0.189	0.191	0.216	0.230	0.225	0.234	0.229
22	0.028	0.001	0.024	0.042	0.054	0.082	0.123	0.159	0.161	0.185	0.207	0.209	0.220	0.213
23	0.020	-0.007	0.011	0.010	0.001	0.013	0.064	0.087	0.097	0.124	0.145	0.153	0.168	0.165
24	0.018	-0.014	0.003	-0.009	-0.020	-0.024	0.020	0.033	0.036	0.071	0.098	0.105	0.123	0.126
25	0.020	-0.012	0.008	-0.013	-0.030	-0.044	-0.020	-0.021	-0.017	0.015	0.050	0.071	0.092	0.096
26	0.023	-0.007	0.008	-0.018	-0.043	-0.071	-0.051	-0.067	-0.062	-0.033	0.006	0.034	0.062	0.070
27	0.007	-0.022	-0.008	-0.033	-0.064	-0.098	-0.085	-0.109	-0.100	-0.071	-0.035	-0.005	0.038	0.055

TABLE VII.- CROSSLEVEL AND INTRALEVEL CORRELATION COEFFICIENTS BETWEEN COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(b) February

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0.133	-0.302	-0.375	-0.273	-0.206	-0.134	-0.095	-0.068	-0.055	-0.044	-0.037	-0.013	0.030	0.077
1	0.413	0.025	-0.172	-0.101	-0.061	-0.026	-0.014	-0.009	-0.018	-0.026	-0.046	-0.048	-0.043	-0.012
2	0.348	0.180	0.013	0.030	0.046	0.067	0.072	0.074	0.062	0.038	0.006	-0.011	-0.029	-0.004
3	0.224	0.113	0.032	0.036	0.051	0.076	0.095	0.109	0.099	0.076	0.048	0.027	0.009	0.032
4	0.163	0.056	0.011	0.035	0.046	0.075	0.097	0.118	0.109	0.091	0.067	0.047	0.038	0.059
5	0.119	0.025	-0.016	0.013	0.030	0.064	0.103	0.128	0.120	0.105	0.080	0.066	0.054	0.075
6	0.102	0.013	-0.023	0.009	0.025	0.063	0.107	0.139	0.133	0.115	0.087	0.075	0.062	0.083
7	0.087	0.007	-0.019	0.010	0.032	0.069	0.113	0.145	0.145	0.128	0.100	0.085	0.067	0.087
8	0.072	-0.004	-0.013	0.017	0.037	0.077	0.119	0.149	0.158	0.149	0.122	0.101	0.085	0.103
9	0.065	0.001	-0.004	0.022	0.036	0.073	0.108	0.138	0.150	0.148	0.121	0.097	0.080	0.101
10	0.064	0.027	0.040	0.064	0.072	0.096	0.127	0.153	0.167	0.166	0.138	0.108	0.085	0.099
11	0.083	0.074	0.096	0.109	0.104	0.120	0.143	0.157	0.171	0.167	0.147	0.109	0.071	0.072
12	0.112	0.139	0.160	0.171	0.162	0.165	0.181	0.190	0.203	0.200	0.180	0.151	0.111	0.089
13	0.108	0.154	0.178	0.186	0.175	0.171	0.188	0.195	0.205	0.206	0.185	0.159	0.133	0.110
14	0.085	0.131	0.159	0.168	0.156	0.154	0.164	0.171	0.181	0.180	0.159	0.123	0.096	0.098
15	0.068	0.100	0.130	0.134	0.124	0.131	0.141	0.146	0.155	0.151	0.129	0.089	0.061	0.068
16	0.086	0.102	0.136	0.130	0.119	0.128	0.130	0.136	0.143	0.139	0.115	0.080	0.056	0.066
17	0.069	0.103	0.148	0.148	0.143	0.155	0.152	0.155	0.160	0.156	0.134	0.101	0.078	0.086
18	0.049	0.093	0.136	0.125	0.123	0.141	0.133	0.141	0.147	0.139	0.119	0.091	0.074	0.076
19	0.044	0.073	0.113	0.114	0.106	0.126	0.122	0.130	0.141	0.141	0.125	0.108	0.094	0.102
20	0.031	0.034	0.067	0.074	0.071	0.086	0.079	0.088	0.102	0.105	0.087	0.076	0.071	0.070
21	0.013	0.004	0.030	0.047	0.043	0.059	0.056	0.067	0.080	0.081	0.066	0.062	0.063	0.069
22	0.028	0.015	0.042	0.056	0.048	0.060	0.058	0.071	0.081	0.077	0.067	0.063	0.059	0.063
23	0.050	0.037	0.054	0.069	0.062	0.063	0.064	0.079	0.085	0.084	0.071	0.072	0.070	0.073
24	0.065	0.039	0.043	0.051	0.053	0.049	0.046	0.064	0.071	0.068	0.056	0.052	0.051	0.051
25	0.085	0.058	0.063	0.070	0.075	0.065	0.059	0.077	0.082	0.080	0.065	0.059	0.058	0.060
26	0.088	0.056	0.070	0.084	0.092	0.086	0.083	0.095	0.097	0.094	0.079	0.074	0.076	0.080
27	0.081	0.059	0.080	0.101	0.110	0.104	0.105	0.113	0.116	0.116	0.098	0.095	0.097	0.101

(b) February – Concluded

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.087	0.120	0.153	0.167	0.153	0.152	0.137	0.102	0.045	0.007	-0.023	-0.061	-0.065	-0.071
1	0.000	0.033	0.064	0.076	0.074	0.069	0.051	0.008	-0.037	-0.042	-0.040	-0.067	-0.051	-0.049
2	-0.004	0.027	0.043	0.058	0.050	0.058	0.059	0.021	-0.002	0.012	0.018	0.003	0.013	0.009
3	0.030	0.058	0.070	0.087	0.076	0.086	0.103	0.084	0.072	0.072	0.074	0.056	0.059	0.055
4	0.054	0.087	0.095	0.118	0.107	0.121	0.140	0.124	0.119	0.109	0.107	0.083	0.087	0.080
5	0.070	0.106	0.109	0.134	0.131	0.151	0.172	0.142	0.134	0.110	0.117	0.087	0.085	0.075
6	0.075	0.112	0.120	0.145	0.145	0.160	0.169	0.139	0.130	0.104	0.105	0.077	0.078	0.066
7	0.081	0.117	0.126	0.150	0.150	0.167	0.166	0.123	0.108	0.075	0.087	0.056	0.059	0.047
8	0.100	0.135	0.139	0.154	0.155	0.172	0.158	0.107	0.094	0.060	0.067	0.039	0.044	0.037
9	0.097	0.127	0.132	0.144	0.148	0.163	0.144	0.089	0.081	0.041	0.056	0.029	0.032	0.028
10	0.099	0.124	0.123	0.127	0.137	0.148	0.130	0.079	0.078	0.041	0.058	0.044	0.044	0.033
11	0.074	0.095	0.087	0.093	0.106	0.110	0.085	0.053	0.056	0.032	0.049	0.038	0.051	0.048
12	0.090	0.108	0.097	0.081	0.088	0.077	0.062	0.027	0.042	0.036	0.059	0.054	0.072	0.071
13	0.091	0.108	0.104	0.094	0.104	0.093	0.086	0.035	0.054	0.046	0.083	0.072	0.086	0.072
14	0.087	0.088	0.093	0.100	0.118	0.115	0.105	0.065	0.081	0.084	0.109	0.106	0.115	0.092
15	0.080	0.083	0.076	0.081	0.107	0.108	0.111	0.083	0.115	0.114	0.127	0.130	0.153	0.130
16	0.071	0.094	0.090	0.075	0.093	0.102	0.115	0.100	0.155	0.157	0.157	0.168	0.199	0.182
17	0.081	0.104	0.119	0.112	0.107	0.125	0.145	0.146	0.209	0.203	0.196	0.203	0.234	0.218
18	0.072	0.084	0.099	0.117	0.124	0.135	0.158	0.182	0.240	0.236	0.233	0.248	0.272	0.252
19	0.103	0.108	0.122	0.143	0.166	0.194	0.201	0.206	0.261	0.259	0.266	0.281	0.301	0.276
20	0.076	0.081	0.091	0.110	0.134	0.186	0.210	0.192	0.251	0.266	0.271	0.280	0.297	0.266
21	0.077	0.075	0.084	0.094	0.119	0.158	0.223	0.230	0.270	0.271	0.268	0.278	0.304	0.278
22	0.065	0.069	0.078	0.075	0.096	0.123	0.179	0.219	0.263	0.259	0.248	0.264	0.295	0.265
23	0.077	0.077	0.079	0.068	0.082	0.098	0.141	0.170	0.227	0.243	0.230	0.235	0.263	0.240
24	0.057	0.055	0.051	0.051	0.065	0.071	0.116	0.128	0.178	0.204	0.219	0.223	0.243	0.224
25	0.065	0.065	0.067	0.058	0.061	0.059	0.097	0.097	0.140	0.168	0.195	0.192	0.197	0.180
26	0.084	0.081	0.080	0.065	0.063	0.059	0.086	0.074	0.096	0.113	0.141	0.146	0.160	0.152
27	0.111	0.104	0.098	0.075	0.074	0.055	0.074	0.055	0.071	0.080	0.102	0.107	0.136	0.128

TABLE VII.- CROSSLEVEL AND INTRALEVEL CORRELATION COEFFICIENTS BETWEEN COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(c) March

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0.087	-0.274	-0.310	-0.237	-0.153	-0.106	-0.080	-0.065	-0.057	-0.066	-0.062	-0.045	-0.004	0.046
1	0.333	0.048	-0.096	-0.051	0.011	0.040	0.033	0.015	0.001	-0.025	-0.040	-0.043	-0.033	-0.002
2	0.299	0.223	0.126	0.141	0.179	0.192	0.171	0.144	0.130	0.100	0.072	0.074	0.070	0.078
3	0.199	0.184	0.155	0.158	0.183	0.197	0.183	0.165	0.154	0.128	0.101	0.093	0.091	0.101
4	0.124	0.126	0.120	0.144	0.163	0.181	0.167	0.159	0.151	0.133	0.106	0.095	0.090	0.103
5	0.071	0.096	0.100	0.135	0.154	0.169	0.162	0.159	0.155	0.142	0.118	0.108	0.107	0.118
6	0.041	0.063	0.075	0.112	0.134	0.149	0.146	0.155	0.161	0.155	0.133	0.123	0.117	0.128
7	0.013	0.029	0.045	0.088	0.113	0.128	0.128	0.140	0.158	0.158	0.141	0.126	0.119	0.128
8	0.000	0.029	0.040	0.075	0.100	0.115	0.111	0.121	0.140	0.150	0.137	0.116	0.106	0.109
9	-0.005	0.017	0.034	0.068	0.095	0.107	0.101	0.109	0.128	0.145	0.133	0.111	0.094	0.095
10	0.003	0.031	0.047	0.083	0.104	0.115	0.106	0.111	0.129	0.148	0.136	0.107	0.084	0.079
11	0.030	0.072	0.096	0.129	0.138	0.139	0.129	0.129	0.141	0.158	0.148	0.118	0.075	0.057
12	0.080	0.146	0.171	0.197	0.199	0.192	0.175	0.172	0.182	0.193	0.181	0.154	0.107	0.060
13	0.091	0.163	0.190	0.220	0.216	0.216	0.206	0.203	0.211	0.217	0.200	0.178	0.142	0.098
14	0.062	0.141	0.173	0.202	0.205	0.208	0.198	0.194	0.202	0.203	0.185	0.162	0.135	0.129
15	0.060	0.133	0.160	0.188	0.191	0.191	0.184	0.178	0.187	0.189	0.170	0.145	0.119	0.118
16	0.062	0.110	0.116	0.143	0.150	0.150	0.144	0.142	0.154	0.158	0.137	0.109	0.085	0.085
17	0.053	0.105	0.111	0.132	0.143	0.144	0.145	0.146	0.157	0.160	0.137	0.109	0.091	0.093
18	0.015	0.078	0.113	0.119	0.131	0.139	0.135	0.134	0.139	0.138	0.114	0.087	0.063	0.071
19	-0.007	0.067	0.103	0.103	0.114	0.127	0.132	0.129	0.127	0.124	0.105	0.080	0.068	0.076
20	-0.011	0.045	0.081	0.080	0.089	0.097	0.096	0.098	0.099	0.094	0.078	0.060	0.058	0.070
21	-0.014	0.028	0.065	0.068	0.072	0.079	0.077	0.085	0.079	0.072	0.059	0.043	0.041	0.053
22	-0.018	0.024	0.053	0.047	0.044	0.050	0.055	0.066	0.057	0.044	0.030	0.009	0.011	0.024
23	-0.021	0.012	0.034	0.032	0.035	0.041	0.051	0.060	0.052	0.043	0.030	0.002	0.003	0.014
24	-0.019	0.027	0.049	0.047	0.044	0.049	0.056	0.062	0.050	0.040	0.027	0.001	-0.000	0.009
25	-0.027	0.036	0.060	0.053	0.045	0.047	0.052	0.054	0.040	0.029	0.017	-0.006	-0.009	-0.002
26	-0.020	0.037	0.049	0.040	0.029	0.031	0.033	0.033	0.014	0.004	-0.008	-0.032	-0.033	-0.025
27	-0.013	0.033	0.044	0.040	0.028	0.028	0.032	0.033	0.011	-0.000	-0.011	-0.032	-0.038	-0.031

(c) March – Concluded

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.068	0.074	0.089	0.095	0.114	0.117	0.105	0.102	0.064	0.010	-0.016	-0.017	-0.029	-0.033
1	0.016	0.007	0.018	0.023	0.027	0.029	0.017	0.008	-0.051	-0.087	-0.089	-0.085	-0.076	-0.089
2	0.085	0.070	0.079	0.062	0.029	0.007	-0.009	-0.014	-0.059	-0.084	-0.084	-0.080	-0.066	-0.065
3	0.098	0.087	0.096	0.074	0.031	0.003	-0.015	-0.009	-0.057	-0.081	-0.086	-0.094	-0.069	-0.058
4	0.098	0.085	0.085	0.079	0.043	0.003	-0.003	0.006	-0.046	-0.062	-0.073	-0.081	-0.055	-0.045
5	0.113	0.094	0.092	0.092	0.063	0.024	0.012	0.025	-0.026	-0.046	-0.058	-0.069	-0.036	-0.031
6	0.129	0.111	0.111	0.110	0.078	0.048	0.039	0.049	-0.002	-0.020	-0.030	-0.046	-0.019	-0.009
7	0.131	0.112	0.115	0.111	0.084	0.050	0.043	0.050	0.000	-0.011	-0.023	-0.038	-0.017	-0.001
8	0.112	0.094	0.102	0.095	0.070	0.037	0.026	0.034	-0.010	-0.017	-0.026	-0.037	-0.018	0.002
9	0.102	0.084	0.088	0.076	0.053	0.027	0.020	0.027	-0.008	-0.008	-0.013	-0.031	-0.015	0.006
10	0.080	0.067	0.069	0.059	0.041	0.017	0.013	0.016	-0.009	-0.012	-0.003	-0.015	-0.003	0.018
11	0.059	0.049	0.055	0.038	0.014	-0.008	-0.001	-0.006	-0.024	-0.027	-0.015	-0.020	-0.001	0.024
12	0.051	0.044	0.050	0.023	-0.007	-0.039	-0.033	-0.037	-0.049	-0.041	-0.016	-0.018	0.004	0.032
13	0.072	0.065	0.077	0.049	0.013	-0.023	-0.013	-0.019	-0.035	-0.026	-0.003	0.000	0.027	0.053
14	0.104	0.075	0.084	0.074	0.040	0.003	0.021	0.015	-0.001	0.002	0.026	0.031	0.049	0.077
15	0.119	0.096	0.087	0.074	0.048	0.024	0.037	0.033	0.032	0.026	0.048	0.047	0.070	0.096
16	0.096	0.093	0.088	0.065	0.045	0.037	0.063	0.060	0.069	0.076	0.108	0.115	0.132	0.139
17	0.099	0.096	0.124	0.110	0.068	0.077	0.116	0.130	0.127	0.139	0.172	0.188	0.195	0.192
18	0.068	0.063	0.086	0.110	0.075	0.074	0.131	0.164	0.187	0.202	0.245	0.260	0.267	0.256
19	0.075	0.074	0.086	0.111	0.132	0.155	0.184	0.226	0.269	0.296	0.335	0.352	0.360	0.354
20	0.064	0.066	0.082	0.102	0.135	0.204	0.232	0.258	0.320	0.354	0.389	0.411	0.424	0.422
21	0.047	0.051	0.072	0.088	0.108	0.184	0.245	0.279	0.336	0.358	0.412	0.431	0.454	0.455
22	0.024	0.022	0.039	0.063	0.091	0.164	0.228	0.308	0.351	0.376	0.434	0.456	0.484	0.479
23	0.012	0.017	0.033	0.052	0.080	0.163	0.228	0.299	0.356	0.383	0.434	0.457	0.481	0.477
24	0.001	0.010	0.027	0.049	0.075	0.157	0.222	0.284	0.351	0.390	0.434	0.450	0.468	0.469
25	-0.011	-0.002	0.015	0.040	0.063	0.142	0.204	0.268	0.326	0.371	0.429	0.445	0.461	0.463
26	-0.031	-0.023	-0.002	0.021	0.033	0.114	0.179	0.238	0.293	0.346	0.402	0.430	0.453	0.458
27	-0.036	-0.029	-0.009	0.016	0.031	0.107	0.175	0.235	0.279	0.327	0.375	0.403	0.435	0.442

TABLE VII.- CROSSLEVEL AND INTRALEVEL CORRELATION COEFFICIENTS BETWEEN COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(d) April

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0.120	-0.165	-0.170	-0.130	-0.083	-0.061	-0.036	-0.020	-0.010	-0.003	-0.008	-0.006	0.007	0.043
1	0.293	0.098	-0.004	0.016	0.045	0.060	0.079	0.079	0.078	0.066	0.047	0.030	0.028	0.049
2	0.172	0.137	0.114	0.118	0.141	0.148	0.163	0.161	0.152	0.140	0.115	0.087	0.074	0.093
3	0.042	0.066	0.135	0.151	0.167	0.183	0.206	0.213	0.203	0.188	0.171	0.145	0.138	0.167
4	-0.018	0.007	0.112	0.150	0.174	0.201	0.229	0.240	0.230	0.217	0.205	0.183	0.183	0.211
5	-0.068	-0.048	0.061	0.113	0.141	0.179	0.215	0.232	0.227	0.211	0.201	0.183	0.182	0.218
6	-0.090	-0.075	0.033	0.091	0.126	0.167	0.207	0.234	0.230	0.214	0.203	0.184	0.182	0.218
7	-0.108	-0.089	0.017	0.070	0.105	0.143	0.187	0.217	0.219	0.206	0.196	0.181	0.182	0.212
8	-0.132	-0.107	-0.008	0.043	0.078	0.120	0.163	0.192	0.193	0.182	0.177	0.168	0.170	0.196
9	-0.140	-0.121	-0.031	0.019	0.049	0.093	0.134	0.162	0.159	0.149	0.149	0.146	0.151	0.176
10	-0.130	-0.099	-0.019	0.023	0.049	0.090	0.123	0.145	0.142	0.133	0.135	0.132	0.133	0.154
11	-0.093	-0.044	0.036	0.071	0.091	0.126	0.152	0.167	0.163	0.155	0.157	0.148	0.139	0.153
12	-0.056	0.031	0.116	0.153	0.177	0.207	0.222	0.233	0.227	0.219	0.223	0.218	0.203	0.189
13	-0.056	0.057	0.141	0.185	0.207	0.236	0.249	0.257	0.256	0.246	0.252	0.248	0.252	0.227
14	-0.078	0.020	0.098	0.132	0.153	0.183	0.203	0.216	0.216	0.214	0.215	0.204	0.212	0.227
15	-0.135	-0.051	0.027	0.069	0.105	0.144	0.168	0.185	0.187	0.188	0.187	0.176	0.178	0.189
16	-0.169	-0.088	-0.009	0.043	0.082	0.119	0.138	0.154	0.157	0.159	0.162	0.159	0.164	0.168
17	-0.159	-0.105	-0.025	0.018	0.054	0.085	0.101	0.123	0.132	0.131	0.138	0.141	0.149	0.167
18	-0.177	-0.150	-0.087	-0.056	-0.029	0.014	0.035	0.055	0.063	0.062	0.064	0.073	0.092	0.119
19	-0.180	-0.153	-0.082	-0.040	-0.009	0.036	0.056	0.071	0.072	0.069	0.072	0.080	0.097	0.129
20	-0.151	-0.123	-0.069	-0.052	-0.021	0.025	0.038	0.047	0.040	0.036	0.049	0.064	0.089	0.130
21	-0.131	-0.112	-0.069	-0.055	-0.030	0.013	0.025	0.040	0.038	0.032	0.048	0.059	0.080	0.110
22	-0.119	-0.090	-0.054	-0.041	-0.020	0.014	0.025	0.039	0.038	0.027	0.044	0.056	0.078	0.098
23	-0.110	-0.064	-0.041	-0.034	-0.012	0.023	0.029	0.043	0.045	0.035	0.051	0.067	0.089	0.100
24	-0.103	-0.055	-0.033	-0.031	-0.006	0.031	0.038	0.046	0.050	0.042	0.052	0.067	0.087	0.098
25	-0.101	-0.053	-0.031	-0.025	-0.004	0.028	0.039	0.050	0.054	0.044	0.054	0.068	0.092	0.101
26	-0.091	-0.043	-0.028	-0.021	-0.003	0.032	0.043	0.054	0.059	0.050	0.059	0.071	0.092	0.093
27	-0.081	-0.039	-0.029	-0.018	-0.004	0.030	0.037	0.049	0.052	0.042	0.049	0.060	0.077	0.074

(d) April – Concluded

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.076	0.084	0.088	0.116	0.110	0.120	0.134	0.117	0.098	0.101	0.089	0.077	0.062	0.060
1	0.069	0.074	0.083	0.110	0.098	0.081	0.074	0.076	0.055	0.048	0.027	0.019	0.009	-0.003
2	0.112	0.128	0.140	0.150	0.143	0.133	0.105	0.098	0.071	0.022	0.011	-0.017	-0.042	-0.049
3	0.182	0.186	0.196	0.211	0.201	0.209	0.175	0.171	0.139	0.078	0.049	0.002	-0.044	-0.053
4	0.231	0.233	0.235	0.252	0.243	0.256	0.215	0.219	0.187	0.106	0.071	0.015	-0.037	-0.051
5	0.240	0.241	0.249	0.263	0.253	0.271	0.236	0.234	0.209	0.124	0.076	0.021	-0.035	-0.048
6	0.242	0.246	0.256	0.262	0.250	0.269	0.243	0.236	0.206	0.134	0.087	0.030	-0.031	-0.043
7	0.232	0.244	0.253	0.259	0.245	0.270	0.241	0.225	0.194	0.127	0.083	0.026	-0.032	-0.043
8	0.214	0.230	0.244	0.251	0.237	0.260	0.226	0.214	0.181	0.108	0.068	0.014	-0.043	-0.053
9	0.198	0.218	0.229	0.240	0.231	0.248	0.216	0.207	0.178	0.094	0.053	0.005	-0.049	-0.050
10	0.178	0.200	0.213	0.231	0.230	0.243	0.208	0.209	0.183	0.094	0.058	0.015	-0.042	-0.042
11	0.177	0.196	0.211	0.231	0.225	0.235	0.204	0.211	0.178	0.095	0.055	0.011	-0.047	-0.044
12	0.214	0.237	0.247	0.260	0.251	0.243	0.209	0.199	0.168	0.081	0.038	-0.001	-0.060	-0.060
13	0.212	0.243	0.258	0.263	0.251	0.230	0.192	0.173	0.150	0.070	0.020	-0.012	-0.071	-0.071
14	0.209	0.205	0.232	0.237	0.221	0.217	0.183	0.161	0.137	0.061	0.016	-0.009	-0.066	-0.065
15	0.221	0.213	0.213	0.230	0.224	0.214	0.186	0.166	0.131	0.057	0.020	0.002	-0.062	-0.065
16	0.200	0.226	0.216	0.206	0.206	0.210	0.194	0.175	0.132	0.067	0.032	0.018	-0.035	-0.027
17	0.180	0.198	0.222	0.200	0.158	0.173	0.189	0.168	0.138	0.092	0.076	0.073	0.026	0.020
18	0.121	0.132	0.159	0.189	0.151	0.147	0.161	0.172	0.157	0.129	0.119	0.122	0.076	0.073
19	0.143	0.148	0.160	0.190	0.216	0.208	0.193	0.228	0.229	0.203	0.193	0.189	0.155	0.146
20	0.134	0.136	0.150	0.165	0.190	0.229	0.217	0.206	0.211	0.201	0.204	0.197	0.169	0.160
21	0.117	0.110	0.123	0.140	0.161	0.202	0.255	0.235	0.207	0.206	0.220	0.214	0.187	0.181
22	0.098	0.099	0.096	0.101	0.115	0.151	0.188	0.230	0.214	0.182	0.215	0.225	0.214	0.215
23	0.093	0.093	0.086	0.085	0.090	0.115	0.158	0.190	0.192	0.185	0.211	0.220	0.214	0.221
24	0.085	0.075	0.058	0.053	0.056	0.085	0.116	0.135	0.152	0.201	0.227	0.218	0.220	0.237
25	0.082	0.074	0.048	0.041	0.049	0.075	0.087	0.097	0.113	0.171	0.231	0.235	0.232	0.244
26	0.072	0.064	0.033	0.026	0.029	0.049	0.058	0.059	0.078	0.130	0.200	0.231	0.234	0.235
27	0.054	0.046	0.010	0.004	0.006	0.026	0.029	0.036	0.056	0.096	0.166	0.208	0.223	0.222

TABLE VII.- CROSSLEVEL AND INTRALEVEL CORRELATION COEFFICIENTS BETWEEN COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(e) May

Altitude level i, km,	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0.248	-0.031	-0.039	0.012	0.047	0.060	0.071	0.060	0.062	0.060	0.051	0.050	0.042	0.060
1	0.367	0.125	0.028	0.071	0.105	0.114	0.121	0.116	0.116	0.100	0.080	0.068	0.056	0.057
2	0.147	0.039	0.042	0.056	0.086	0.105	0.124	0.124	0.115	0.097	0.082	0.076	0.075	0.093
3	0.026	-0.044	0.033	0.060	0.089	0.116	0.143	0.159	0.157	0.139	0.128	0.120	0.127	0.158
4	-0.023	-0.080	0.009	0.047	0.070	0.108	0.144	0.160	0.163	0.143	0.135	0.124	0.136	0.181
5	-0.045	-0.102	-0.004	0.041	0.072	0.111	0.152	0.170	0.172	0.152	0.146	0.137	0.149	0.198
6	-0.092	-0.141	-0.028	0.019	0.049	0.091	0.129	0.154	0.154	0.135	0.133	0.122	0.139	0.189
7	-0.132	-0.173	-0.054	0.002	0.036	0.077	0.114	0.145	0.153	0.138	0.134	0.124	0.142	0.192
8	-0.150	-0.177	-0.053	0.003	0.038	0.079	0.112	0.144	0.149	0.141	0.142	0.134	0.154	0.205
9	-0.154	-0.171	-0.042	0.015	0.045	0.086	0.116	0.148	0.153	0.147	0.154	0.148	0.163	0.209
10	-0.148	-0.161	-0.036	0.017	0.047	0.086	0.111	0.143	0.146	0.139	0.147	0.144	0.159	0.209
11	-0.144	-0.145	-0.022	0.028	0.051	0.089	0.110	0.139	0.142	0.134	0.147	0.148	0.155	0.204
12	-0.118	-0.109	0.002	0.045	0.070	0.106	0.124	0.153	0.158	0.156	0.170	0.180	0.186	0.206
13	-0.102	-0.097	-0.022	0.012	0.031	0.065	0.083	0.108	0.113	0.108	0.116	0.128	0.160	0.185
14	-0.114	-0.099	-0.030	-0.003	0.019	0.053	0.075	0.102	0.109	0.101	0.108	0.113	0.146	0.212
15	-0.112	-0.090	-0.026	-0.004	0.017	0.047	0.071	0.095	0.102	0.097	0.102	0.105	0.133	0.189
16	-0.113	-0.095	-0.030	-0.008	0.006	0.034	0.062	0.084	0.091	0.091	0.103	0.107	0.132	0.185
17	-0.122	-0.108	-0.042	-0.024	-0.005	0.026	0.052	0.074	0.081	0.085	0.097	0.102	0.131	0.186
18	-0.126	-0.115	-0.066	-0.054	-0.042	-0.012	0.017	0.032	0.036	0.037	0.055	0.066	0.102	0.164
19	-0.102	-0.094	-0.054	-0.043	-0.043	-0.022	0.012	0.024	0.024	0.023	0.037	0.049	0.076	0.136
20	-0.108	-0.099	-0.069	-0.067	-0.063	-0.036	-0.006	0.009	0.011	0.008	0.017	0.025	0.048	0.107
21	-0.097	-0.111	-0.086	-0.084	-0.085	-0.066	-0.035	-0.024	-0.027	-0.028	-0.015	-0.005	0.015	0.055
22	-0.090	-0.090	-0.085	-0.103	-0.109	-0.091	-0.067	-0.061	-0.061	-0.059	-0.050	-0.039	-0.019	0.013
23	-0.098	-0.110	-0.107	-0.111	-0.111	-0.097	-0.082	-0.077	-0.078	-0.077	-0.072	-0.066	-0.054	-0.035
24	-0.085	-0.108	-0.124	-0.127	-0.130	-0.118	-0.102	-0.097	-0.096	-0.089	-0.080	-0.075	-0.064	-0.047
25	-0.084	-0.127	-0.133	-0.130	-0.127	-0.122	-0.107	-0.102	-0.097	-0.088	-0.076	-0.073	-0.065	-0.053
26	-0.067	-0.118	-0.131	-0.130	-0.132	-0.129	-0.117	-0.111	-0.102	-0.089	-0.073	-0.068	-0.065	-0.065
27	-0.052	-0.097	-0.128	-0.129	-0.130	-0.127	-0.114	-0.104	-0.096	-0.084	-0.072	-0.068	-0.063	-0.067

(e) May – Concluded

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.074	0.069	0.066	0.074	0.090	0.096	0.076	0.074	0.065	0.042	0.019	0.010	0.003	0.001
1	0.073	0.062	0.050	0.053	0.065	0.091	0.082	0.039	0.023	0.007	-0.012	-0.000	-0.000	0.007
2	0.119	0.115	0.106	0.101	0.116	0.149	0.169	0.136	0.096	0.046	0.021	0.025	-0.007	-0.015
3	0.178	0.171	0.160	0.155	0.159	0.203	0.224	0.186	0.161	0.121	0.074	0.061	0.023	0.002
4	0.197	0.188	0.184	0.189	0.204	0.238	0.257	0.217	0.189	0.156	0.103	0.094	0.042	0.014
5	0.213	0.212	0.210	0.212	0.229	0.260	0.285	0.240	0.210	0.177	0.121	0.120	0.068	0.036
6	0.205	0.206	0.214	0.218	0.234	0.269	0.291	0.244	0.219	0.194	0.129	0.128	0.082	0.042
7	0.204	0.215	0.231	0.237	0.250	0.285	0.304	0.257	0.238	0.213	0.152	0.142	0.100	0.061
8	0.214	0.229	0.245	0.250	0.260	0.296	0.317	0.269	0.247	0.222	0.164	0.152	0.106	0.068
9	0.214	0.227	0.243	0.250	0.249	0.280	0.311	0.275	0.253	0.218	0.171	0.156	0.110	0.068
10	0.207	0.222	0.237	0.240	0.241	0.270	0.305	0.277	0.243	0.205	0.160	0.140	0.099	0.063
11	0.201	0.216	0.230	0.230	0.228	0.254	0.291	0.259	0.234	0.198	0.156	0.137	0.093	0.055
12	0.210	0.223	0.236	0.228	0.224	0.247	0.271	0.242	0.215	0.177	0.144	0.134	0.097	0.068
13	0.164	0.189	0.206	0.200	0.198	0.221	0.254	0.222	0.203	0.172	0.141	0.131	0.102	0.067
14	0.181	0.169	0.206	0.207	0.195	0.207	0.239	0.211	0.201	0.174	0.157	0.140	0.109	0.077
15	0.204	0.187	0.188	0.193	0.188	0.208	0.228	0.204	0.188	0.161	0.139	0.127	0.105	0.064
16	0.199	0.226	0.218	0.178	0.177	0.199	0.218	0.205	0.176	0.148	0.134	0.137	0.116	0.072
17	0.200	0.220	0.250	0.200	0.167	0.190	0.216	0.204	0.192	0.134	0.119	0.130	0.113	0.074
18	0.176	0.196	0.234	0.223	0.166	0.145	0.178	0.165	0.176	0.154	0.145	0.148	0.130	0.086
19	0.151	0.170	0.195	0.182	0.175	0.157	0.136	0.120	0.147	0.132	0.147	0.157	0.148	0.101
20	0.120	0.143	0.176	0.160	0.160	0.198	0.168	0.101	0.132	0.151	0.166	0.176	0.168	0.115
21	0.077	0.105	0.132	0.112	0.112	0.160	0.194	0.123	0.068	0.114	0.153	0.188	0.188	0.137
22	0.017	0.044	0.077	0.069	0.061	0.081	0.095	0.113	0.114	0.070	0.126	0.191	0.194	0.155
23	-0.025	0.002	0.039	0.035	0.016	0.017	0.013	0.035	0.128	0.131	0.132	0.182	0.208	0.184
24	-0.045	-0.022	0.006	-0.005	-0.018	-0.027	-0.031	-0.010	0.063	0.160	0.190	0.169	0.197	0.193
25	-0.062	-0.048	-0.021	-0.037	-0.047	-0.054	-0.059	-0.045	0.025	0.132	0.220	0.218	0.215	0.209
26	-0.076	-0.062	-0.036	-0.055	-0.063	-0.074	-0.069	-0.075	-0.012	0.080	0.182	0.238	0.257	0.224
27	-0.079	-0.066	-0.045	-0.063	-0.069	-0.080	-0.080	-0.088	-0.034	0.042	0.154	0.233	0.288	0.247

TABLE VII.- CROSSLEVEL AND INTRALEVEL CORRELATION COEFFICIENTS BETWEEN COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE — Continued

(f) June

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of —													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0.321	0.031	-0.017	-0.004	0.012	0.012	0.010	-0.004	-0.034	-0.051	-0.068	-0.091	-0.097	-0.056
1	0.408	0.219	0.124	0.109	0.104	0.092	0.088	0.045	-0.002	-0.038	-0.066	-0.096	-0.102	-0.057
2	0.218	0.123	0.136	0.150	0.151	0.151	0.144	0.107	0.076	0.048	0.015	-0.020	-0.036	0.006
3	0.082	0.003	0.078	0.116	0.146	0.160	0.160	0.142	0.119	0.103	0.078	0.051	0.037	0.071
4	0.037	-0.042	0.033	0.087	0.139	0.156	0.166	0.156	0.140	0.133	0.111	0.089	0.078	0.106
5	0.012	-0.057	0.003	0.046	0.103	0.118	0.134	0.134	0.123	0.125	0.105	0.088	0.080	0.104
6	-0.008	-0.069	-0.006	0.044	0.100	0.109	0.130	0.142	0.142	0.144	0.125	0.115	0.108	0.128
7	-0.063	-0.102	-0.033	0.013	0.070	0.089	0.108	0.124	0.139	0.154	0.145	0.140	0.130	0.147
8	-0.080	-0.114	-0.050	-0.004	0.054	0.072	0.096	0.114	0.138	0.166	0.167	0.167	0.157	0.172
9	-0.103	-0.132	-0.071	-0.024	0.037	0.055	0.082	0.111	0.138	0.171	0.183	0.188	0.176	0.184
10	-0.126	-0.138	-0.076	-0.030	0.024	0.045	0.068	0.099	0.132	0.165	0.185	0.199	0.190	0.194
11	-0.118	-0.123	-0.062	-0.010	0.035	0.055	0.076	0.106	0.137	0.169	0.191	0.209	0.197	0.198
12	-0.107	-0.095	-0.033	0.010	0.058	0.072	0.087	0.119	0.144	0.170	0.190	0.212	0.203	0.195
13	-0.102	-0.075	-0.011	0.021	0.064	0.080	0.096	0.127	0.146	0.167	0.178	0.203	0.206	0.200
14	-0.097	-0.068	-0.016	0.003	0.040	0.053	0.075	0.096	0.114	0.138	0.147	0.167	0.167	0.190
15	-0.091	-0.056	-0.021	-0.009	0.034	0.041	0.061	0.084	0.096	0.114	0.121	0.134	0.130	0.148
16	-0.103	-0.071	-0.030	-0.016	0.029	0.037	0.055	0.072	0.081	0.097	0.100	0.113	0.113	0.121
17	-0.094	-0.074	-0.036	-0.011	0.032	0.036	0.048	0.064	0.072	0.089	0.090	0.104	0.109	0.114
18	-0.083	-0.044	-0.020	0.002	0.035	0.036	0.045	0.056	0.064	0.074	0.074	0.092	0.101	0.114
19	-0.069	-0.012	0.007	0.016	0.046	0.048	0.059	0.059	0.067	0.076	0.080	0.095	0.107	0.110
20	-0.079	-0.013	0.005	0.007	0.025	0.024	0.041	0.037	0.043	0.052	0.059	0.071	0.088	0.104
21	-0.060	-0.006	-0.002	-0.003	0.015	0.008	0.029	0.020	0.022	0.023	0.025	0.037	0.057	0.068
22	-0.060	-0.034	-0.018	-0.027	0.010	0.008	0.036	0.024	0.027	0.023	0.022	0.030	0.046	0.051
23	-0.043	0.000	0.017	-0.000	0.038	0.032	0.053	0.038	0.039	0.030	0.029	0.024	0.046	0.049
24	-0.031	0.017	0.038	0.030	0.065	0.064	0.077	0.061	0.062	0.057	0.051	0.044	0.063	0.066
25	-0.029	0.001	0.036	0.037	0.070	0.067	0.090	0.074	0.074	0.077	0.072	0.067	0.075	0.075
26	-0.058	-0.012	0.023	0.017	0.046	0.044	0.066	0.045	0.050	0.055	0.056	0.059	0.070	0.070
27	-0.073	-0.017	0.015	0.019	0.046	0.052	0.068	0.046	0.046	0.048	0.046	0.047	0.061	0.056

(f) June — Concluded

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of —													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.007	0.022	0.038	0.041	0.037	0.043	0.047	0.068	0.028	0.040	0.063	0.054	0.026	0.021
1	-0.012	0.034	0.054	0.079	0.081	0.067	0.070	0.081	0.051	0.041	0.030	0.029	0.023	0.003
2	0.061	0.111	0.142	0.163	0.170	0.168	0.175	0.184	0.149	0.085	0.049	0.043	0.036	-0.003
3	0.129	0.187	0.223	0.218	0.215	0.222	0.230	0.221	0.189	0.105	0.063	0.038	0.038	0.017
4	0.158	0.219	0.254	0.246	0.233	0.235	0.243	0.230	0.194	0.116	0.079	0.035	0.035	0.043
5	0.151	0.205	0.238	0.232	0.225	0.224	0.229	0.220	0.179	0.104	0.070	0.036	0.039	0.052
6	0.171	0.222	0.249	0.249	0.244	0.235	0.229	0.218	0.174	0.096	0.066	0.042	0.052	0.066
7	0.180	0.228	0.261	0.255	0.248	0.245	0.240	0.229	0.178	0.102	0.072	0.046	0.061	0.074
8	0.195	0.248	0.276	0.266	0.256	0.248	0.239	0.220	0.176	0.109	0.083	0.048	0.066	0.072
9	0.203	0.255	0.283	0.274	0.264	0.254	0.242	0.224	0.185	0.113	0.085	0.046	0.067	0.073
10	0.214	0.264	0.288	0.278	0.267	0.251	0.242	0.223	0.178	0.108	0.085	0.047	0.064	0.070
11	0.217	0.269	0.295	0.284	0.274	0.257	0.246	0.220	0.173	0.114	0.087	0.046	0.066	0.065
12	0.216	0.278	0.302	0.289	0.279	0.259	0.244	0.209	0.168	0.121	0.090	0.036	0.066	0.073
13	0.198	0.266	0.299	0.297	0.281	0.257	0.245	0.205	0.163	0.116	0.093	0.041	0.074	0.078
14	0.188	0.221	0.267	0.276	0.271	0.260	0.261	0.226	0.187	0.127	0.091	0.053	0.088	0.074
15	0.185	0.218	0.233	0.257	0.259	0.262	0.267	0.239	0.199	0.137	0.098	0.069	0.116	0.085
16	0.153	0.229	0.247	0.226	0.234	0.241	0.247	0.234	0.191	0.152	0.122	0.091	0.135	0.097
17	0.138	0.202	0.269	0.253	0.195	0.204	0.209	0.213	0.188	0.159	0.133	0.105	0.138	0.113
18	0.130	0.184	0.236	0.297	0.238	0.175	0.164	0.172	0.147	0.132	0.104	0.104	0.135	0.106
19	0.119	0.158	0.200	0.254	0.275	0.182	0.080	0.096	0.098	0.096	0.093	0.105	0.130	0.114
20	0.106	0.133	0.162	0.192	0.193	0.206	0.106	0.010	0.034	0.059	0.082	0.084	0.112	0.092
21	0.077	0.093	0.106	0.129	0.120	0.132	0.138	0.069	0.000	0.034	0.057	0.097	0.114	0.077
22	0.072	0.078	0.068	0.092	0.066	0.073	0.097	0.103	0.066	0.017	0.047	0.072	0.079	0.055
23	0.076	0.072	0.054	0.069	0.041	0.046	0.058	0.037	0.107	0.069	0.029	0.038	0.042	0.013
24	0.086	0.089	0.064	0.063	0.032	0.032	0.021	-0.009	0.082	0.136	0.115	0.060	0.036	0.025
25	0.078	0.085	0.073	0.074	0.020	0.025	-0.000	-0.044	0.021	0.078	0.168	0.133	0.036	0.026
26	0.063	0.070	0.054	0.058	-0.002	-0.014	-0.044	-0.073	-0.019	0.036	0.132	0.168	0.106	0.050
27	0.050	0.055	0.044	0.049	-0.003	-0.026	-0.066	-0.086	-0.039	0.008	0.087	0.126	0.141	0.108

TABLE VII.- CROSSLEVEL AND INTRALEVEL CORRELATION COEFFICIENTS BETWEEN COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE — Continued

(g) July

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of —													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0.261	0.027	0.033	0.071	0.067	0.080	0.076	0.083	0.086	0.080	0.075	0.066	0.057	0.067
1	0.370	0.240	0.212	0.255	0.221	0.215	0.191	0.161	0.139	0.110	0.079	0.063	0.065	0.087
2	0.137	0.085	0.156	0.201	0.178	0.176	0.162	0.163	0.166	0.141	0.113	0.094	0.097	0.123
3	0.025	-0.022	0.075	0.153	0.157	0.157	0.166	0.177	0.188	0.167	0.149	0.132	0.135	0.162
4	-0.046	-0.084	0.020	0.103	0.116	0.127	0.150	0.174	0.196	0.180	0.166	0.153	0.157	0.179
5	-0.059	-0.098	-0.005	0.079	0.086	0.105	0.139	0.166	0.191	0.184	0.169	0.159	0.169	0.188
6	-0.096	-0.131	-0.044	0.037	0.051	0.065	0.099	0.138	0.169	0.174	0.160	0.152	0.165	0.188
7	-0.124	-0.154	-0.072	0.004	0.019	0.040	0.068	0.109	0.159	0.168	0.155	0.150	0.161	0.185
8	-0.151	-0.169	-0.086	-0.007	0.005	0.027	0.058	0.091	0.147	0.167	0.157	0.153	0.162	0.188
9	-0.184	-0.200	-0.111	-0.028	-0.015	0.009	0.042	0.082	0.131	0.164	0.167	0.170	0.175	0.195
10	-0.211	-0.202	-0.117	-0.036	-0.024	-0.003	0.031	0.068	0.119	0.154	0.164	0.178	0.183	0.194
11	-0.211	-0.194	-0.118	-0.044	-0.032	-0.019	0.016	0.049	0.101	0.131	0.144	0.161	0.168	0.177
12	-0.202	-0.183	-0.103	-0.031	-0.021	-0.014	0.013	0.047	0.094	0.125	0.139	0.158	0.163	0.163
13	-0.207	-0.182	-0.101	-0.039	-0.032	-0.023	0.002	0.039	0.084	0.121	0.134	0.154	0.174	0.177
14	-0.211	-0.188	-0.116	-0.064	-0.057	-0.039	-0.017	0.025	0.070	0.106	0.117	0.131	0.146	0.186
15	-0.190	-0.172	-0.140	-0.095	-0.090	-0.068	-0.039	0.002	0.044	0.070	0.077	0.083	0.096	0.130
16	-0.178	-0.168	-0.129	-0.095	-0.080	-0.053	-0.022	0.015	0.051	0.075	0.073	0.078	0.093	0.118
17	-0.146	-0.173	-0.110	-0.048	-0.034	-0.015	0.014	0.045	0.070	0.087	0.092	0.097	0.110	0.133
18	-0.105	-0.149	-0.086	-0.025	-0.023	-0.007	0.012	0.048	0.078	0.099	0.102	0.113	0.133	0.163
19	-0.066	-0.084	-0.054	-0.017	-0.011	0.017	0.033	0.056	0.080	0.097	0.094	0.109	0.136	0.173
20	-0.028	-0.050	-0.054	-0.031	-0.018	0.008	0.031	0.058	0.073	0.088	0.084	0.096	0.114	0.146
21	-0.047	-0.026	-0.013	-0.032	-0.026	0.000	0.019	0.045	0.063	0.071	0.065	0.076	0.090	0.111
22	-0.057	-0.013	-0.018	-0.040	-0.036	-0.018	0.008	0.031	0.045	0.050	0.045	0.048	0.056	0.067
23	-0.067	-0.027	-0.035	-0.044	-0.035	-0.014	-0.005	0.019	0.034	0.037	0.031	0.021	0.019	0.034
24	-0.058	-0.041	-0.039	-0.047	-0.035	-0.007	0.000	0.012	0.028	0.024	0.013	0.006	-0.000	0.018
25	-0.029	-0.045	-0.063	-0.063	-0.055	-0.033	-0.033	-0.027	-0.021	-0.027	-0.040	-0.048	-0.051	-0.025
26	-0.022	-0.067	-0.105	-0.090	-0.087	-0.078	-0.074	-0.062	-0.054	-0.053	-0.060	-0.069	-0.072	-0.055
27	-0.014	-0.051	-0.080	-0.078	-0.087	-0.089	-0.095	-0.084	-0.083	-0.093	-0.096	-0.104	-0.105	-0.094

(g) July — Concluded

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of —													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.089	0.136	0.156	0.130	0.135	0.102	0.092	0.076	0.054	0.053	0.043	0.035	0.021	0.008
1	0.134	0.180	0.201	0.181	0.152	0.112	0.072	0.043	0.019	0.026	0.022	0.021	0.013	-0.005
2	0.174	0.218	0.232	0.215	0.199	0.180	0.158	0.118	0.091	0.085	0.069	0.059	0.042	0.031
3	0.211	0.253	0.264	0.250	0.225	0.210	0.175	0.147	0.117	0.106	0.098	0.073	0.055	0.034
4	0.236	0.268	0.276	0.265	0.250	0.231	0.190	0.167	0.139	0.121	0.100	0.079	0.063	0.041
5	0.243	0.275	0.280	0.278	0.273	0.268	0.231	0.196	0.153	0.138	0.119	0.099	0.086	0.062
6	0.237	0.253	0.250	0.263	0.266	0.267	0.227	0.196	0.144	0.124	0.111	0.101	0.090	0.063
7	0.223	0.228	0.226	0.251	0.253	0.258	0.225	0.186	0.125	0.115	0.096	0.090	0.083	0.059
8	0.221	0.219	0.221	0.252	0.256	0.257	0.218	0.183	0.121	0.104	0.086	0.077	0.070	0.050
9	0.219	0.218	0.224	0.247	0.252	0.247	0.214	0.171	0.115	0.103	0.083	0.078	0.069	0.047
10	0.212	0.215	0.218	0.232	0.239	0.232	0.200	0.164	0.107	0.098	0.082	0.068	0.060	0.037
11	0.197	0.204	0.208	0.217	0.234	0.232	0.184	0.145	0.100	0.091	0.077	0.068	0.065	0.039
12	0.182	0.197	0.207	0.220	0.230	0.221	0.179	0.138	0.091	0.087	0.070	0.062	0.067	0.040
13	0.177	0.189	0.202	0.218	0.228	0.225	0.184	0.145	0.100	0.091	0.073	0.063	0.062	0.032
14	0.191	0.156	0.184	0.214	0.226	0.229	0.198	0.156	0.107	0.089	0.074	0.074	0.072	0.044
15	0.182	0.151	0.127	0.187	0.214	0.216	0.196	0.164	0.122	0.098	0.075	0.075	0.069	0.033
16	0.156	0.183	0.165	0.163	0.201	0.228	0.219	0.200	0.151	0.125	0.091	0.076	0.069	0.036
17	0.159	0.178	0.237	0.225	0.178	0.215	0.190	0.166	0.125	0.102	0.070	0.051	0.041	0.027
18	0.176	0.173	0.216	0.282	0.213	0.169	0.183	0.159	0.106	0.065	0.043	0.044	0.052	0.034
19	0.184	0.177	0.199	0.244	0.286	0.219	0.126	0.126	0.083	0.053	0.041	0.030	0.022	-0.010
20	0.159	0.143	0.156	0.196	0.222	0.258	0.162	0.027	-0.014	-0.009	0.007	0.031	0.020	-0.000
21	0.129	0.112	0.114	0.142	0.164	0.210	0.235	0.084	-0.060	-0.065	-0.037	-0.011	0.027	0.024
22	0.090	0.094	0.087	0.107	0.136	0.169	0.218	0.206	0.052	-0.043	-0.047	-0.038	-0.010	-0.011
23	0.057	0.069	0.062	0.062	0.089	0.116	0.159	0.200	0.167	0.049	-0.054	-0.051	-0.020	-0.012
24	0.038	0.051	0.043	0.047	0.056	0.072	0.102	0.138	0.156	0.134	0.012	-0.057	-0.041	-0.034
25	-0.011	0.006	0.001	0.007	0.000	0.001	0.020	0.063	0.097	0.100	0.072	-0.021	-0.060	-0.081
26	-0.043	-0.026	-0.028	-0.029	-0.024	-0.035	-0.020	-0.002	0.018	0.050	0.077	0.062	0.006	-0.067
27	-0.081	-0.068	-0.057	-0.055	-0.053	-0.065	-0.037	-0.036	-0.021	0.020	0.047	0.078	0.080	0.001

TABLE VII.- CROSSLEVEL AND INTRALEVEL CORRELATION COEFFICIENTS BETWEEN COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(h) August

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0.365	0.069	0.025	0.033	0.024	0.026	0.048	0.027	0.007	-0.012	-0.031	-0.045	-0.042	-0.010
1	0.480	0.246	0.135	0.109	0.092	0.068	0.070	0.034	-0.009	-0.044	-0.077	-0.101	-0.112	-0.085
2	0.238	0.117	0.109	0.080	0.069	0.045	0.050	0.032	-0.001	-0.031	-0.055	-0.088	-0.092	-0.063
3	0.106	0.009	0.050	0.074	0.082	0.068	0.080	0.075	0.054	0.034	0.019	-0.007	-0.016	0.006
4	0.075	-0.028	0.033	0.062	0.079	0.084	0.105	0.100	0.085	0.069	0.046	0.013	0.001	0.037
5	0.048	-0.049	0.004	0.032	0.050	0.070	0.100	0.100	0.087	0.077	0.054	0.028	0.019	0.059
6	0.024	-0.058	0.004	0.025	0.044	0.067	0.110	0.124	0.119	0.110	0.090	0.062	0.052	0.091
7	-0.027	-0.081	-0.006	0.020	0.043	0.058	0.095	0.118	0.142	0.140	0.126	0.103	0.091	0.124
8	-0.077	-0.119	-0.036	-0.002	0.026	0.042	0.081	0.107	0.147	0.169	0.166	0.148	0.134	0.156
9	-0.110	-0.138	-0.056	-0.013	0.014	0.030	0.069	0.103	0.146	0.186	0.204	0.191	0.173	0.184
10	-0.137	-0.156	-0.065	-0.012	0.018	0.039	0.077	0.119	0.168	0.211	0.239	0.240	0.226	0.230
11	-0.130	-0.143	-0.059	-0.002	0.026	0.047	0.080	0.122	0.176	0.222	0.252	0.263	0.248	0.249
12	-0.119	-0.126	-0.035	0.022	0.049	0.065	0.097	0.135	0.186	0.226	0.255	0.273	0.263	0.256
13	-0.113	-0.108	-0.008	0.053	0.073	0.090	0.119	0.155	0.206	0.240	0.266	0.285	0.289	0.285
14	-0.121	-0.106	-0.020	0.039	0.054	0.076	0.102	0.140	0.185	0.217	0.230	0.244	0.250	0.281
15	-0.120	-0.112	-0.032	0.012	0.031	0.055	0.088	0.128	0.174	0.211	0.219	0.227	0.230	0.258
16	-0.100	-0.092	-0.003	0.041	0.062	0.092	0.120	0.165	0.196	0.225	0.227	0.230	0.233	0.253
17	-0.091	-0.094	0.016	0.063	0.089	0.116	0.140	0.179	0.206	0.230	0.231	0.233	0.238	0.261
18	-0.073	-0.066	0.018	0.044	0.071	0.102	0.130	0.158	0.181	0.206	0.218	0.224	0.233	0.252
19	-0.039	-0.037	0.039	0.049	0.066	0.095	0.113	0.142	0.167	0.186	0.193	0.197	0.204	0.226
20	-0.016	-0.000	0.049	0.055	0.061	0.083	0.104	0.130	0.148	0.166	0.168	0.164	0.170	0.185
21	-0.023	0.029	0.066	0.046	0.060	0.084	0.103	0.131	0.144	0.157	0.163	0.157	0.164	0.176
22	-0.008	0.036	0.084	0.072	0.094	0.118	0.137	0.166	0.172	0.189	0.189	0.179	0.185	0.191
23	-0.026	0.020	0.076	0.068	0.095	0.116	0.146	0.178	0.191	0.211	0.203	0.195	0.197	0.195
24	-0.034	-0.002	0.068	0.073	0.097	0.121	0.146	0.181	0.192	0.210	0.212	0.207	0.210	0.205
25	-0.033	0.004	0.094	0.098	0.105	0.141	0.167	0.198	0.208	0.220	0.220	0.214	0.222	0.221
26	-0.003	0.007	0.092	0.102	0.092	0.130	0.161	0.190	0.201	0.212	0.214	0.206	0.214	0.211
27	0.022	0.027	0.097	0.115	0.088	0.123	0.149	0.178	0.188	0.196	0.197	0.187	0.191	0.192

(h) August – Concluded

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.018	0.051	0.093	0.096	0.078	0.047	0.027	0.041	0.067	0.076	0.074	0.077	0.032	0.025
1	-0.052	-0.004	0.052	0.073	0.076	0.027	-0.018	-0.026	-0.020	-0.002	0.015	0.042	0.001	-0.006
2	-0.015	0.035	0.074	0.094	0.121	0.096	0.062	0.052	0.046	0.036	0.026	0.054	0.012	0.006
3	0.056	0.107	0.152	0.160	0.181	0.166	0.135	0.139	0.125	0.099	0.078	0.084	0.058	0.040
4	0.087	0.136	0.177	0.185	0.231	0.204	0.166	0.162	0.163	0.142	0.101	0.102	0.077	0.047
5	0.108	0.151	0.181	0.188	0.238	0.224	0.196	0.187	0.177	0.141	0.100	0.110	0.081	0.062
6	0.139	0.168	0.195	0.211	0.263	0.256	0.218	0.199	0.180	0.143	0.091	0.093	0.076	0.058
7	0.166	0.183	0.207	0.230	0.290	0.272	0.237	0.222	0.184	0.142	0.084	0.086	0.085	0.074
8	0.191	0.190	0.208	0.232	0.292	0.267	0.244	0.231	0.190	0.140	0.083	0.078	0.079	0.062
9	0.207	0.199	0.211	0.224	0.281	0.259	0.242	0.233	0.200	0.147	0.075	0.067	0.080	0.061
10	0.242	0.224	0.228	0.235	0.285	0.250	0.237	0.228	0.191	0.138	0.067	0.071	0.091	0.074
11	0.258	0.239	0.239	0.248	0.286	0.254	0.246	0.234	0.196	0.139	0.075	0.086	0.094	0.077
12	0.267	0.248	0.244	0.250	0.283	0.243	0.247	0.238	0.192	0.136	0.073	0.091	0.094	0.084
13	0.264	0.252	0.255	0.254	0.283	0.257	0.249	0.238	0.196	0.149	0.081	0.101	0.099	0.091
14	0.265	0.228	0.245	0.256	0.297	0.282	0.266	0.251	0.189	0.142	0.091	0.108	0.114	0.105
15	0.292	0.247	0.226	0.265	0.312	0.301	0.290	0.256	0.187	0.142	0.084	0.112	0.115	0.110
16	0.282	0.291	0.267	0.248	0.306	0.319	0.308	0.273	0.215	0.166	0.100	0.120	0.112	0.113
17	0.282	0.285	0.323	0.294	0.253	0.285	0.291	0.255	0.185	0.163	0.098	0.108	0.114	0.124
18	0.274	0.262	0.290	0.341	0.275	0.230	0.239	0.218	0.161	0.131	0.080	0.095	0.102	0.106
19	0.244	0.221	0.229	0.267	0.294	0.235	0.171	0.155	0.136	0.114	0.073	0.087	0.080	0.098
20	0.204	0.176	0.176	0.192	0.215	0.240	0.178	0.073	0.056	0.067	0.046	0.055	0.069	0.075
21	0.193	0.168	0.153	0.177	0.168	0.208	0.225	0.121	0.018	0.009	0.020	0.015	0.038	0.055
22	0.210	0.191	0.168	0.179	0.152	0.180	0.209	0.174	0.048	-0.011	0.013	0.006	0.020	0.047
23	0.223	0.212	0.183	0.179	0.153	0.155	0.190	0.174	0.128	0.072	-0.005	-0.020	-0.006	0.039
24	0.218	0.214	0.179	0.145	0.115	0.102	0.131	0.134	0.132	0.158	0.061	-0.020	-0.007	0.050
25	0.222	0.219	0.188	0.150	0.116	0.099	0.086	0.114	0.113	0.156	0.137	0.062	0.008	0.038
26	0.211	0.210	0.181	0.150	0.122	0.091	0.069	0.090	0.077	0.126	0.131	0.108	0.050	0.042
27	0.190	0.186	0.176	0.148	0.114	0.072	0.057	0.066	0.031	0.069	0.083	0.072	0.051	0.039

TABLE VII.- CROSSLEVEL AND INTRALEVEL CORRELATION COEFFICIENTS BETWEEN COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(i) September

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0.357	0.025	-0.045	-0.025	-0.018	0.000	0.015	0.023	0.041	0.042	0.030	0.012	0.010	0.019
1	0.499	0.263	0.106	0.104	0.087	0.075	0.050	0.041	0.032	0.021	-0.006	-0.039	-0.044	-0.037
2	0.294	0.168	0.143	0.176	0.166	0.168	0.155	0.156	0.155	0.147	0.121	0.092	0.082	0.091
3	0.158	0.060	0.099	0.168	0.190	0.207	0.205	0.214	0.232	0.240	0.222	0.201	0.193	0.201
4	0.084	0.008	0.059	0.157	0.190	0.230	0.230	0.250	0.279	0.298	0.288	0.273	0.269	0.281
5	0.027	-0.040	0.018	0.123	0.166	0.211	0.225	0.255	0.287	0.313	0.305	0.294	0.293	0.306
6	-0.007	-0.061	0.003	0.111	0.151	0.195	0.220	0.264	0.302	0.327	0.324	0.313	0.310	0.319
7	-0.054	-0.092	-0.019	0.089	0.137	0.184	0.217	0.272	0.326	0.355	0.357	0.347	0.345	0.351
8	-0.094	-0.134	-0.054	0.049	0.094	0.147	0.185	0.242	0.307	0.347	0.360	0.354	0.354	0.358
9	-0.108	-0.145	-0.064	0.035	0.079	0.124	0.167	0.233	0.303	0.345	0.367	0.358	0.356	0.353
10	-0.122	-0.149	-0.060	0.030	0.076	0.118	0.157	0.225	0.294	0.338	0.368	0.362	0.357	0.351
11	-0.139	-0.147	-0.061	0.020	0.059	0.100	0.137	0.201	0.270	0.313	0.346	0.347	0.341	0.334
12	-0.151	-0.134	-0.034	0.041	0.076	0.112	0.145	0.205	0.268	0.307	0.343	0.348	0.342	0.319
13	-0.144	-0.112	-0.008	0.067	0.099	0.130	0.163	0.216	0.275	0.313	0.343	0.349	0.357	0.334
14	-0.147	-0.112	-0.003	0.069	0.106	0.141	0.166	0.216	0.275	0.314	0.343	0.354	0.366	0.367
15	-0.146	-0.120	-0.020	0.055	0.099	0.133	0.157	0.203	0.260	0.298	0.325	0.337	0.348	0.354
16	-0.120	-0.106	-0.010	0.063	0.100	0.132	0.154	0.200	0.259	0.297	0.318	0.324	0.333	0.338
17	-0.095	-0.098	-0.011	0.061	0.092	0.120	0.140	0.183	0.246	0.282	0.301	0.304	0.313	0.320
18	-0.081	-0.103	-0.030	0.033	0.064	0.102	0.119	0.160	0.218	0.254	0.273	0.280	0.290	0.296
19	-0.072	-0.088	-0.036	0.026	0.057	0.091	0.108	0.149	0.203	0.244	0.264	0.273	0.281	0.287
20	-0.039	-0.055	-0.027	0.016	0.049	0.081	0.088	0.123	0.171	0.209	0.220	0.224	0.235	0.240
21	-0.043	-0.051	-0.025	0.023	0.046	0.073	0.080	0.116	0.154	0.186	0.198	0.204	0.207	0.205
22	-0.044	-0.058	-0.041	0.014	0.022	0.046	0.056	0.091	0.128	0.164	0.167	0.171	0.174	0.172
23	-0.056	-0.065	-0.041	0.018	0.024	0.047	0.052	0.080	0.112	0.139	0.145	0.153	0.155	0.150
24	-0.052	-0.071	-0.047	0.009	0.019	0.041	0.040	0.064	0.090	0.112	0.111	0.118	0.121	0.117
25	-0.031	-0.044	-0.023	0.016	0.027	0.046	0.042	0.067	0.088	0.107	0.100	0.104	0.101	0.096
26	-0.017	-0.042	-0.013	0.022	0.038	0.047	0.040	0.067	0.086	0.106	0.099	0.100	0.096	0.087
27	-0.029	-0.051	-0.016	0.018	0.024	0.035	0.027	0.044	0.058	0.075	0.068	0.071	0.068	0.063

(i) September – Concluded

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.049	0.099	0.118	0.152	0.165	0.145	0.127	0.109	0.085	0.066	0.046	-0.004	-0.020	-0.045
1	-0.008	0.043	0.090	0.141	0.156	0.162	0.129	0.112	0.092	0.049	0.016	-0.032	-0.048	-0.060
2	0.113	0.166	0.200	0.241	0.253	0.263	0.221	0.207	0.178	0.115	0.086	0.033	-0.004	-0.039
3	0.223	0.258	0.279	0.311	0.319	0.323	0.286	0.261	0.215	0.138	0.114	0.064	0.005	-0.021
4	0.295	0.325	0.339	0.354	0.353	0.353	0.320	0.300	0.241	0.166	0.135	0.096	0.026	-0.012
5	0.315	0.339	0.356	0.361	0.358	0.363	0.334	0.310	0.238	0.171	0.143	0.114	0.045	0.006
6	0.328	0.343	0.356	0.365	0.351	0.360	0.332	0.305	0.243	0.180	0.161	0.123	0.059	0.018
7	0.353	0.357	0.366	0.363	0.349	0.359	0.338	0.312	0.255	0.199	0.170	0.140	0.070	0.023
8	0.357	0.353	0.353	0.343	0.330	0.331	0.319	0.296	0.244	0.184	0.155	0.136	0.072	0.034
9	0.348	0.342	0.339	0.325	0.311	0.314	0.304	0.279	0.240	0.180	0.146	0.142	0.080	0.047
10	0.341	0.332	0.328	0.311	0.296	0.302	0.293	0.257	0.235	0.183	0.147	0.140	0.084	0.039
11	0.324	0.319	0.318	0.295	0.277	0.281	0.275	0.243	0.220	0.167	0.135	0.136	0.078	0.037
12	0.318	0.317	0.317	0.291	0.264	0.268	0.263	0.234	0.217	0.166	0.113	0.128	0.081	0.039
13	0.319	0.324	0.324	0.301	0.269	0.271	0.255	0.230	0.206	0.150	0.103	0.123	0.078	0.029
14	0.348	0.330	0.339	0.323	0.283	0.283	0.265	0.237	0.210	0.157	0.114	0.141	0.081	0.031
15	0.372	0.352	0.338	0.326	0.299	0.304	0.288	0.259	0.221	0.168	0.112	0.120	0.068	0.035
16	0.352	0.358	0.344	0.316	0.317	0.324	0.310	0.281	0.236	0.181	0.130	0.139	0.084	0.047
17	0.328	0.333	0.350	0.337	0.296	0.324	0.313	0.289	0.251	0.202	0.141	0.156	0.095	0.063
18	0.297	0.296	0.311	0.349	0.324	0.299	0.309	0.301	0.265	0.232	0.157	0.160	0.092	0.057
19	0.292	0.279	0.283	0.298	0.322	0.309	0.253	0.263	0.254	0.220	0.161	0.158	0.105	0.073
20	0.240	0.220	0.227	0.233	0.245	0.324	0.276	0.201	0.201	0.204	0.161	0.155	0.119	0.090
21	0.197	0.183	0.179	0.186	0.192	0.251	0.292	0.238	0.170	0.181	0.149	0.173	0.136	0.111
22	0.167	0.151	0.139	0.151	0.145	0.173	0.206	0.240	0.195	0.118	0.095	0.164	0.156	0.134
23	0.151	0.127	0.125	0.127	0.114	0.132	0.141	0.172	0.227	0.156	0.069	0.115	0.138	0.134
24	0.123	0.101	0.107	0.111	0.100	0.114	0.107	0.121	0.178	0.190	0.104	0.073	0.089	0.105
25	0.100	0.091	0.097	0.105	0.100	0.102	0.086	0.114	0.128	0.158	0.152	0.122	0.076	0.079
26	0.100	0.101	0.104	0.115	0.115	0.118	0.083	0.095	0.095	0.120	0.114	0.148	0.120	0.093
27	0.078	0.078	0.081	0.093	0.097	0.106	0.066	0.069	0.062	0.072	0.058	0.097	0.157	0.163

TABLE VII.- CROSSLEVEL AND INTRALEVEL CORRELATION COEFFICIENTS BETWEEN COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(j) October

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0.285	-0.128	-0.209	-0.158	-0.135	-0.113	-0.093	-0.082	-0.074	-0.089	-0.120	-0.129	-0.114	-0.066
1	0.455	0.109	-0.057	-0.045	-0.029	-0.018	-0.012	-0.016	-0.022	-0.055	-0.101	-0.128	-0.130	-0.092
2	0.309	0.101	0.021	0.037	0.054	0.072	0.082	0.077	0.072	0.041	-0.002	-0.035	-0.041	-0.009
3	0.203	0.021	0.012	0.050	0.089	0.114	0.135	0.135	0.137	0.104	0.062	0.034	0.035	0.069
4	0.151	-0.038	-0.019	0.047	0.082	0.114	0.143	0.152	0.162	0.131	0.094	0.070	0.075	0.115
5	0.109	-0.063	-0.033	0.039	0.080	0.118	0.155	0.167	0.177	0.148	0.113	0.093	0.101	0.141
6	0.069	-0.074	-0.030	0.046	0.094	0.128	0.165	0.182	0.196	0.172	0.139	0.122	0.131	0.170
7	0.037	-0.080	-0.026	0.055	0.105	0.133	0.168	0.188	0.212	0.191	0.164	0.148	0.152	0.186
8	0.017	-0.087	-0.026	0.053	0.102	0.128	0.164	0.183	0.212	0.200	0.180	0.167	0.168	0.193
9	-0.005	-0.090	-0.029	0.044	0.093	0.119	0.152	0.170	0.198	0.195	0.182	0.174	0.174	0.194
10	-0.007	-0.073	-0.011	0.051	0.094	0.112	0.142	0.154	0.180	0.177	0.171	0.163	0.165	0.174
11	-0.013	-0.070	-0.007	0.052	0.089	0.105	0.134	0.148	0.171	0.173	0.174	0.168	0.164	0.165
12	-0.011	-0.041	0.014	0.054	0.085	0.104	0.130	0.143	0.165	0.170	0.175	0.175	0.172	0.153
13	0.003	-0.027	0.026	0.056	0.079	0.095	0.120	0.129	0.147	0.153	0.158	0.154	0.169	0.147
14	-0.001	-0.043	0.018	0.052	0.076	0.093	0.117	0.128	0.148	0.151	0.153	0.144	0.165	0.170
15	0.015	-0.045	0.013	0.041	0.059	0.072	0.093	0.103	0.123	0.129	0.131	0.122	0.142	0.153
16	0.012	-0.063	-0.016	0.011	0.033	0.048	0.072	0.085	0.103	0.109	0.108	0.100	0.115	0.125
17	-0.004	-0.076	-0.023	-0.003	0.023	0.033	0.057	0.072	0.088	0.092	0.092	0.086	0.099	0.113
18	-0.014	-0.079	-0.034	-0.027	0.007	0.021	0.054	0.066	0.081	0.085	0.084	0.073	0.087	0.104
19	-0.018	-0.099	-0.037	-0.017	0.021	0.035	0.066	0.073	0.093	0.094	0.095	0.077	0.088	0.113
20	-0.009	-0.077	-0.043	-0.034	0.001	0.010	0.040	0.043	0.048	0.047	0.043	0.027	0.027	0.048
21	-0.009	-0.067	-0.049	-0.044	-0.021	-0.017	0.005	0.007	0.008	0.000	-0.011	-0.027	-0.034	-0.030
22	0.015	-0.038	-0.035	-0.034	-0.022	-0.024	-0.011	-0.010	-0.013	-0.029	-0.043	-0.052	-0.058	-0.058
23	-0.001	-0.040	-0.035	-0.024	-0.012	-0.010	-0.004	-0.008	-0.014	-0.032	-0.047	-0.056	-0.066	-0.061
24	-0.002	-0.022	-0.020	-0.016	-0.006	-0.004	0.002	-0.005	-0.016	-0.034	-0.050	-0.062	-0.079	-0.076
25	0.013	0.003	-0.005	-0.010	-0.005	-0.009	-0.009	-0.013	-0.026	-0.045	-0.059	-0.072	-0.093	-0.092
26	0.023	0.009	-0.007	-0.008	-0.007	-0.006	-0.010	-0.013	-0.027	-0.046	-0.058	-0.072	-0.089	-0.090
27	0.023	0.009	-0.012	-0.014	-0.013	-0.005	-0.012	-0.017	-0.032	-0.050	-0.059	-0.066	-0.085	-0.083

(j) October – Concluded

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	-0.029	0.008	0.062	0.092	0.118	0.179	0.210	0.226	0.213	0.193	0.175	0.177	0.166	0.114
1	-0.064	-0.036	0.012	0.061	0.088	0.134	0.188	0.224	0.234	0.235	0.200	0.184	0.178	0.141
2	0.017	0.047	0.091	0.146	0.165	0.199	0.236	0.255	0.248	0.247	0.219	0.191	0.190	0.153
3	0.095	0.128	0.167	0.220	0.237	0.266	0.293	0.306	0.291	0.281	0.231	0.202	0.193	0.151
4	0.141	0.176	0.218	0.268	0.282	0.319	0.334	0.347	0.326	0.298	0.250	0.221	0.216	0.175
5	0.169	0.201	0.243	0.291	0.309	0.343	0.352	0.365	0.346	0.316	0.264	0.229	0.222	0.178
6	0.195	0.224	0.265	0.311	0.327	0.359	0.362	0.377	0.363	0.330	0.284	0.239	0.226	0.187
7	0.209	0.236	0.277	0.323	0.333	0.361	0.369	0.375	0.361	0.327	0.284	0.244	0.239	0.194
8	0.209	0.233	0.271	0.311	0.314	0.342	0.348	0.357	0.337	0.301	0.264	0.226	0.231	0.190
9	0.202	0.221	0.255	0.289	0.284	0.312	0.320	0.334	0.312	0.287	0.252	0.214	0.225	0.186
10	0.177	0.190	0.216	0.246	0.243	0.276	0.284	0.305	0.280	0.263	0.230	0.194	0.210	0.181
11	0.162	0.175	0.199	0.219	0.215	0.236	0.248	0.261	0.247	0.229	0.199	0.165	0.191	0.173
12	0.149	0.159	0.175	0.197	0.187	0.199	0.197	0.219	0.204	0.185	0.170	0.143	0.170	0.154
13	0.128	0.148	0.163	0.180	0.173	0.189	0.190	0.206	0.192	0.176	0.161	0.148	0.173	0.155
14	0.151	0.149	0.170	0.190	0.186	0.203	0.209	0.235	0.228	0.205	0.181	0.170	0.182	0.161
15	0.163	0.164	0.166	0.193	0.206	0.229	0.239	0.268	0.276	0.239	0.207	0.190	0.202	0.168
16	0.141	0.166	0.172	0.184	0.201	0.242	0.256	0.286	0.291	0.261	0.229	0.201	0.204	0.170
17	0.126	0.153	0.187	0.204	0.199	0.252	0.276	0.302	0.315	0.279	0.257	0.223	0.213	0.170
18	0.120	0.140	0.168	0.218	0.228	0.243	0.288	0.325	0.344	0.311	0.296	0.255	0.236	0.189
19	0.124	0.145	0.160	0.200	0.270	0.296	0.300	0.346	0.376	0.360	0.357	0.304	0.276	0.232
20	0.055	0.072	0.088	0.123	0.196	0.288	0.321	0.334	0.394	0.397	0.399	0.351	0.321	0.276
21	-0.030	-0.010	0.004	0.037	0.110	0.225	0.334	0.358	0.363	0.390	0.423	0.394	0.350	0.306
22	-0.055	-0.032	-0.011	0.016	0.085	0.185	0.278	0.374	0.401	0.375	0.411	0.393	0.362	0.322
23	-0.065	-0.057	-0.034	-0.013	0.048	0.136	0.208	0.309	0.400	0.379	0.374	0.366	0.349	0.317
24	-0.085	-0.083	-0.069	-0.055	-0.003	0.077	0.155	0.226	0.326	0.362	0.380	0.349	0.351	0.333
25	-0.095	-0.096	-0.085	-0.074	-0.030	0.039	0.098	0.169	0.251	0.306	0.387	0.355	0.314	0.311
26	-0.095	-0.099	-0.087	-0.076	-0.033	0.013	0.063	0.127	0.197	0.250	0.339	0.347	0.320	0.295
27	-0.091	-0.096	-0.076	-0.067	-0.033	0.007	0.052	0.103	0.163	0.213	0.289	0.318	0.340	0.329

TABLE VII.- CROSSLEVEL AND INTRALEVEL CORRELATION COEFFICIENTS BETWEEN COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE — Continued

(k) November

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of —													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0.061	-0.260	-0.287	-0.202	-0.161	-0.132	-0.093	-0.077	-0.072	-0.058	-0.044	-0.028	-0.016	0.013
1	0.382	0.122	-0.011	0.021	0.027	0.036	0.044	0.042	0.025	0.028	0.024	0.019	0.019	0.031
2	0.306	0.172	0.111	0.155	0.167	0.172	0.169	0.171	0.161	0.165	0.154	0.147	0.144	0.158
3	0.182	0.076	0.067	0.119	0.149	0.164	0.170	0.181	0.175	0.185	0.179	0.175	0.176	0.190
4	0.132	0.024	0.031	0.087	0.128	0.147	0.159	0.175	0.171	0.183	0.182	0.183	0.188	0.198
5	0.087	-0.013	-0.001	0.063	0.106	0.125	0.144	0.163	0.164	0.181	0.183	0.184	0.189	0.202
6	0.071	-0.021	-0.008	0.052	0.092	0.110	0.132	0.156	0.162	0.182	0.185	0.184	0.187	0.195
7	0.068	-0.013	-0.002	0.057	0.102	0.120	0.138	0.163	0.174	0.192	0.196	0.194	0.198	0.205
8	0.054	-0.017	0.007	0.067	0.112	0.132	0.149	0.173	0.186	0.207	0.211	0.207	0.204	0.208
9	0.062	0.002	0.032	0.087	0.128	0.145	0.160	0.177	0.187	0.209	0.213	0.208	0.201	0.200
10	0.084	0.029	0.053	0.100	0.136	0.149	0.160	0.172	0.177	0.195	0.197	0.191	0.184	0.181
11	0.105	0.061	0.085	0.121	0.146	0.151	0.156	0.163	0.166	0.181	0.185	0.175	0.162	0.156
12	0.138	0.099	0.112	0.141	0.156	0.146	0.147	0.150	0.152	0.164	0.171	0.165	0.149	0.126
13	0.150	0.127	0.147	0.172	0.180	0.170	0.170	0.175	0.173	0.179	0.184	0.181	0.181	0.158
14	0.134	0.110	0.131	0.166	0.179	0.169	0.170	0.179	0.178	0.185	0.185	0.182	0.188	0.192
15	0.128	0.116	0.145	0.175	0.187	0.175	0.176	0.185	0.184	0.192	0.188	0.182	0.186	0.186
16	0.115	0.103	0.123	0.153	0.165	0.150	0.151	0.161	0.163	0.171	0.167	0.165	0.170	0.166
17	0.126	0.100	0.110	0.130	0.138	0.129	0.132	0.139	0.142	0.149	0.148	0.153	0.165	0.170
18	0.091	0.068	0.084	0.109	0.121	0.119	0.119	0.127	0.129	0.138	0.140	0.149	0.162	0.171
19	0.044	0.025	0.045	0.070	0.090	0.093	0.093	0.103	0.107	0.115	0.114	0.126	0.141	0.162
20	0.035	0.020	0.036	0.063	0.080	0.078	0.078	0.086	0.096	0.104	0.104	0.118	0.143	0.174
21	0.062	0.024	0.032	0.053	0.066	0.060	0.063	0.067	0.077	0.083	0.085	0.102	0.130	0.160
22	0.091	0.039	0.042	0.065	0.075	0.073	0.077	0.078	0.084	0.089	0.093	0.106	0.129	0.157
23	0.124	0.070	0.046	0.056	0.061	0.057	0.059	0.059	0.060	0.062	0.067	0.075	0.095	0.120
24	0.149	0.087	0.048	0.056	0.063	0.059	0.059	0.057	0.055	0.057	0.060	0.069	0.083	0.100
25	0.164	0.112	0.063	0.062	0.069	0.062	0.057	0.056	0.050	0.053	0.051	0.059	0.071	0.081
26	0.160	0.116	0.065	0.060	0.065	0.061	0.053	0.052	0.045	0.047	0.045	0.049	0.057	0.066
27	0.152	0.107	0.055	0.051	0.057	0.054	0.047	0.045	0.039	0.041	0.040	0.041	0.047	0.049

(k) November — Concluded

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of —													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.035	0.048	0.066	0.084	0.085	0.094	0.094	0.086	0.041	0.017	0.003	-0.013	-0.027	-0.024
1	0.045	0.066	0.063	0.065	0.059	0.054	0.017	0.012	0.001	-0.009	-0.005	-0.009	-0.011	-0.023
2	0.174	0.188	0.179	0.175	0.158	0.143	0.095	0.076	0.060	0.046	0.053	0.061	0.056	0.034
3	0.203	0.210	0.202	0.202	0.181	0.158	0.118	0.091	0.067	0.045	0.057	0.062	0.067	0.059
4	0.207	0.211	0.206	0.206	0.191	0.170	0.133	0.108	0.080	0.059	0.066	0.074	0.085	0.076
5	0.212	0.214	0.209	0.212	0.199	0.176	0.137	0.104	0.079	0.058	0.063	0.070	0.083	0.069
6	0.210	0.217	0.211	0.212	0.196	0.177	0.141	0.103	0.076	0.056	0.064	0.068	0.085	0.071
7	0.216	0.222	0.217	0.218	0.203	0.179	0.148	0.107	0.080	0.064	0.072	0.081	0.094	0.083
8	0.215	0.220	0.212	0.211	0.191	0.162	0.139	0.094	0.067	0.055	0.060	0.063	0.081	0.074
9	0.208	0.214	0.205	0.198	0.172	0.143	0.122	0.082	0.053	0.046	0.057	0.063	0.082	0.075
10	0.197	0.203	0.189	0.186	0.161	0.132	0.116	0.075	0.051	0.051	0.060	0.073	0.093	0.087
11	0.177	0.183	0.162	0.161	0.144	0.120	0.102	0.060	0.047	0.054	0.062	0.075	0.093	0.087
12	0.149	0.160	0.141	0.134	0.116	0.094	0.085	0.043	0.028	0.053	0.062	0.072	0.097	0.096
13	0.157	0.173	0.158	0.154	0.133	0.113	0.101	0.062	0.047	0.067	0.082	0.091	0.109	0.113
14	0.184	0.177	0.173	0.178	0.164	0.152	0.131	0.098	0.082	0.098	0.112	0.121	0.138	0.127
15	0.207	0.204	0.188	0.202	0.193	0.189	0.170	0.141	0.123	0.127	0.140	0.155	0.174	0.153
16	0.190	0.219	0.195	0.196	0.205	0.205	0.186	0.157	0.138	0.137	0.156	0.166	0.182	0.152
17	0.194	0.216	0.226	0.230	0.232	0.251	0.245	0.224	0.203	0.206	0.228	0.237	0.237	0.190
18	0.195	0.215	0.226	0.255	0.262	0.271	0.283	0.270	0.249	0.251	0.265	0.284	0.291	0.252
19	0.178	0.204	0.213	0.243	0.293	0.305	0.289	0.291	0.277	0.289	0.312	0.333	0.335	0.302
20	0.191	0.222	0.234	0.255	0.303	0.356	0.361	0.335	0.341	0.352	0.380	0.395	0.395	0.356
21	0.178	0.205	0.221	0.243	0.288	0.353	0.418	0.414	0.391	0.411	0.436	0.442	0.428	0.392
22	0.175	0.194	0.207	0.229	0.266	0.326	0.395	0.427	0.426	0.430	0.457	0.462	0.430	0.394
23	0.138	0.151	0.164	0.187	0.224	0.280	0.345	0.377	0.406	0.426	0.429	0.437	0.405	0.378
24	0.119	0.133	0.144	0.163	0.199	0.257	0.317	0.343	0.373	0.414	0.441	0.421	0.374	0.358
25	0.100	0.113	0.122	0.140	0.180	0.223	0.287	0.308	0.337	0.384	0.443	0.423	0.372	0.353
26	0.082	0.095	0.103	0.121	0.163	0.200	0.261	0.283	0.319	0.359	0.421	0.424	0.383	0.349
27	0.067	0.078	0.085	0.100	0.143	0.179	0.238	0.256	0.286	0.334	0.394	0.398	0.366	0.335

TABLE VII.- CROSSLEVEL AND INTRALEVEL CORRELATION COEFFICIENTS BETWEEN COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE – Continued

(l) December

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0.094	-0.285	-0.293	-0.201	-0.143	-0.106	-0.084	-0.066	-0.051	-0.036	-0.027	-0.013	-0.003	0.025
1	0.432	0.128	-0.013	0.018	0.021	0.015	-0.003	-0.018	-0.027	-0.039	-0.049	-0.040	-0.027	-0.005
2	0.335	0.205	0.103	0.131	0.124	0.110	0.094	0.080	0.073	0.061	0.057	0.066	0.078	0.078
3	0.167	0.075	0.036	0.075	0.089	0.094	0.093	0.093	0.093	0.080	0.077	0.087	0.097	0.101
4	0.083	-0.017	-0.035	0.021	0.049	0.071	0.083	0.095	0.099	0.090	0.087	0.099	0.108	0.115
5	0.036	-0.059	-0.066	0.002	0.042	0.068	0.089	0.109	0.114	0.107	0.105	0.116	0.120	0.123
6	-0.007	-0.071	-0.071	0.002	0.042	0.070	0.097	0.125	0.131	0.125	0.125	0.132	0.133	0.139
7	-0.036	-0.088	-0.085	-0.007	0.034	0.066	0.096	0.128	0.139	0.133	0.132	0.136	0.133	0.140
8	-0.058	-0.095	-0.083	-0.010	0.030	0.062	0.090	0.119	0.137	0.135	0.136	0.140	0.135	0.143
9	-0.076	-0.092	-0.068	-0.001	0.032	0.064	0.091	0.120	0.139	0.142	0.143	0.144	0.138	0.143
10	-0.080	-0.071	-0.052	0.009	0.038	0.066	0.089	0.118	0.138	0.143	0.145	0.140	0.128	0.134
11	-0.070	-0.042	-0.032	0.016	0.038	0.062	0.079	0.107	0.121	0.123	0.125	0.119	0.098	0.106
12	-0.074	-0.008	0.001	0.032	0.050	0.067	0.080	0.102	0.116	0.119	0.122	0.124	0.105	0.099
13	-0.072	0.002	0.009	0.036	0.047	0.061	0.074	0.091	0.105	0.109	0.116	0.122	0.116	0.109
14	-0.096	-0.027	-0.025	0.006	0.019	0.038	0.056	0.069	0.082	0.089	0.097	0.103	0.100	0.122
15	-0.109	-0.051	-0.038	-0.008	0.006	0.025	0.050	0.066	0.084	0.088	0.098	0.106	0.106	0.123
16	-0.109	-0.054	-0.035	-0.012	-0.001	0.014	0.040	0.056	0.076	0.082	0.094	0.103	0.108	0.128
17	-0.097	-0.048	-0.037	-0.020	-0.009	0.009	0.028	0.040	0.061	0.070	0.082	0.095	0.108	0.126
18	-0.094	-0.052	-0.050	-0.034	-0.017	0.003	0.026	0.041	0.061	0.073	0.090	0.111	0.120	0.142
19	-0.095	-0.049	-0.051	-0.036	-0.027	-0.011	0.010	0.024	0.041	0.052	0.076	0.100	0.115	0.140
20	-0.074	-0.027	-0.026	-0.003	0.005	0.013	0.030	0.042	0.063	0.068	0.087	0.112	0.129	0.148
21	-0.044	-0.017	-0.022	0.002	0.004	0.010	0.029	0.041	0.063	0.067	0.080	0.101	0.112	0.134
22	-0.027	-0.010	-0.007	0.011	0.017	0.020	0.036	0.048	0.068	0.072	0.085	0.107	0.118	0.142
23	-0.016	-0.006	-0.003	0.017	0.026	0.031	0.044	0.053	0.075	0.079	0.093	0.109	0.119	0.140
24	-0.003	0.014	0.021	0.035	0.042	0.043	0.057	0.065	0.087	0.088	0.099	0.113	0.122	0.137
25	0.009	0.032	0.041	0.058	0.060	0.063	0.077	0.084	0.101	0.101	0.112	0.125	0.128	0.139
26	0.020	0.037	0.059	0.080	0.086	0.086	0.099	0.106	0.120	0.119	0.126	0.134	0.128	0.138
27	0.028	0.044	0.070	0.090	0.102	0.100	0.109	0.114	0.126	0.126	0.130	0.136	0.128	0.142

(l) December – Concluded

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of –													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.052	0.063	0.053	0.050	0.076	0.076	0.091	0.073	0.064	0.080	0.086	0.091	0.095	0.080
1	0.001	0.006	0.006	0.010	0.037	0.030	0.049	0.043	0.063	0.080	0.107	0.099	0.096	0.080
2	0.079	0.087	0.085	0.077	0.093	0.089	0.092	0.088	0.103	0.121	0.142	0.156	0.154	0.132
3	0.098	0.114	0.114	0.113	0.128	0.127	0.121	0.112	0.128	0.144	0.165	0.181	0.178	0.153
4	0.100	0.115	0.123	0.125	0.123	0.116	0.107	0.107	0.122	0.142	0.163	0.172	0.166	0.145
5	0.109	0.119	0.131	0.135	0.136	0.125	0.107	0.104	0.127	0.150	0.171	0.181	0.171	0.151
6	0.125	0.131	0.143	0.147	0.144	0.130	0.117	0.118	0.135	0.150	0.168	0.188	0.180	0.163
7	0.121	0.132	0.146	0.147	0.146	0.135	0.116	0.119	0.141	0.157	0.174	0.197	0.188	0.170
8	0.125	0.133	0.145	0.145	0.146	0.132	0.123	0.123	0.142	0.157	0.165	0.189	0.186	0.172
9	0.126	0.133	0.144	0.141	0.138	0.124	0.113	0.117	0.137	0.145	0.157	0.186	0.186	0.177
10	0.117	0.124	0.134	0.134	0.132	0.118	0.113	0.112	0.119	0.127	0.148	0.176	0.180	0.174
11	0.088	0.095	0.101	0.105	0.104	0.092	0.084	0.087	0.088	0.098	0.123	0.147	0.147	0.143
12	0.082	0.087	0.094	0.099	0.095	0.076	0.062	0.066	0.064	0.076	0.102	0.132	0.138	0.139
13	0.079	0.083	0.095	0.105	0.102	0.086	0.064	0.059	0.051	0.065	0.086	0.130	0.142	0.139
14	0.095	0.094	0.107	0.121	0.119	0.110	0.093	0.081	0.076	0.097	0.117	0.157	0.176	0.175
15	0.119	0.126	0.121	0.140	0.148	0.140	0.130	0.123	0.131	0.144	0.169	0.205	0.221	0.222
16	0.123	0.147	0.144	0.147	0.162	0.167	0.160	0.152	0.158	0.181	0.214	0.247	0.258	0.258
17	0.113	0.137	0.152	0.163	0.172	0.181	0.180	0.168	0.174	0.193	0.228	0.266	0.276	0.287
18	0.135	0.158	0.169	0.194	0.217	0.226	0.228	0.220	0.224	0.229	0.269	0.303	0.316	0.322
19	0.141	0.159	0.172	0.180	0.227	0.276	0.278	0.274	0.289	0.291	0.339	0.368	0.377	0.373
20	0.156	0.168	0.178	0.185	0.232	0.299	0.335	0.330	0.350	0.363	0.405	0.434	0.429	0.411
21	0.139	0.152	0.162	0.168	0.203	0.258	0.332	0.361	0.384	0.404	0.438	0.466	0.461	0.435
22	0.143	0.153	0.159	0.157	0.176	0.226	0.297	0.355	0.403	0.423	0.452	0.478	0.476	0.453
23	0.142	0.147	0.162	0.148	0.165	0.209	0.271	0.314	0.375	0.411	0.449	0.478	0.478	0.460
24	0.138	0.133	0.154	0.143	0.157	0.201	0.259	0.289	0.348	0.396	0.444	0.473	0.468	0.445
25	0.136	0.131	0.152	0.146	0.149	0.188	0.246	0.270	0.328	0.368	0.415	0.460	0.460	0.437
26	0.137	0.134	0.158	0.150	0.150	0.186	0.244	0.268	0.320	0.355	0.389	0.440	0.454	0.432
27	0.141	0.142	0.165	0.158	0.157	0.189	0.249	0.266	0.309	0.341	0.365	0.407	0.436	0.415

TABLE VII.- CROSSLEVEL AND INTRALEVEL CORRELATION COEFFICIENTS BETWEEN COMPONENTS OF WIND VELOCITY AT WALLOPS ISLAND BASED ON SERIALLY COMPLETED SAMPLE — Concluded

(m) Annual

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of —													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	0.198	-0.135	-0.168	-0.114	-0.076	-0.049	-0.029	-0.022	-0.019	-0.021	-0.026	-0.025	-0.013	0.017
1	0.407	0.149	0.021	0.043	0.054	0.059	0.057	0.043	0.026	0.006	-0.018	-0.033	-0.034	-0.014
2	0.266	0.154	0.103	0.120	0.128	0.131	0.129	0.120	0.107	0.086	0.061	0.042	0.035	0.052
3	0.140	0.065	0.078	0.111	0.133	0.144	0.153	0.154	0.149	0.133	0.113	0.096	0.090	0.109
4	0.078	0.008	0.042	0.092	0.118	0.141	0.156	0.165	0.164	0.153	0.135	0.121	0.119	0.139
5	0.038	-0.023	0.015	0.070	0.101	0.128	0.153	0.166	0.168	0.161	0.144	0.132	0.131	0.152
6	0.008	-0.043	0.001	0.057	0.089	0.116	0.145	0.168	0.175	0.169	0.154	0.142	0.141	0.161
7	-0.021	-0.061	-0.012	0.045	0.080	0.107	0.135	0.162	0.180	0.179	0.166	0.155	0.152	0.170
8	-0.044	-0.074	-0.020	0.036	0.070	0.098	0.127	0.153	0.176	0.183	0.175	0.165	0.161	0.176
9	-0.056	-0.079	-0.023	0.032	0.064	0.090	0.118	0.145	0.168	0.181	0.180	0.171	0.165	0.176
10	-0.061	-0.068	-0.011	0.040	0.068	0.091	0.115	0.141	0.165	0.179	0.181	0.174	0.166	0.173
11	-0.050	-0.042	0.014	0.059	0.080	0.098	0.118	0.140	0.163	0.176	0.182	0.175	0.160	0.162
12	-0.032	-0.002	0.052	0.091	0.108	0.120	0.135	0.155	0.175	0.187	0.194	0.193	0.178	0.162
13	-0.027	0.014	0.067	0.102	0.114	0.124	0.139	0.158	0.176	0.187	0.192	0.192	0.192	0.177
14	-0.039	0.001	0.051	0.083	0.096	0.109	0.124	0.143	0.162	0.173	0.175	0.172	0.174	0.190
15	-0.043	-0.008	0.036	0.065	0.079	0.093	0.110	0.128	0.146	0.157	0.157	0.152	0.152	0.167
16	-0.042	-0.015	0.029	0.056	0.071	0.085	0.101	0.119	0.136	0.146	0.145	0.141	0.142	0.153
17	-0.039	-0.020	0.027	0.055	0.070	0.084	0.098	0.115	0.131	0.140	0.140	0.138	0.142	0.156
18	-0.043	-0.027	0.013	0.034	0.049	0.066	0.080	0.096	0.110	0.119	0.121	0.122	0.129	0.146
19	-0.040	-0.024	0.012	0.031	0.043	0.061	0.075	0.088	0.101	0.109	0.112	0.114	0.122	0.141
20	-0.032	-0.018	0.006	0.019	0.032	0.047	0.060	0.071	0.082	0.088	0.089	0.091	0.102	0.121
21	-0.031	-0.020	-0.000	0.008	0.017	0.030	0.043	0.055	0.064	0.067	0.068	0.071	0.080	0.095
22	-0.023	-0.014	0.003	0.008	0.016	0.027	0.041	0.051	0.058	0.059	0.058	0.060	0.068	0.079
23	-0.020	-0.012	0.002	0.010	0.019	0.028	0.040	0.049	0.055	0.056	0.054	0.053	0.059	0.067
24	-0.014	-0.010	0.003	0.010	0.020	0.031	0.039	0.047	0.052	0.052	0.049	0.048	0.052	0.059
25	-0.006	-0.005	0.009	0.016	0.024	0.032	0.040	0.048	0.050	0.051	0.047	0.045	0.047	0.053
26	-0.000	-0.005	0.006	0.014	0.020	0.028	0.035	0.042	0.045	0.047	0.044	0.042	0.043	0.045
27	0.003	-0.002	0.007	0.017	0.020	0.028	0.033	0.038	0.039	0.039	0.036	0.034	0.034	0.035

(m) Annual — Concluded

Altitude level i, km, of zonal component	Crosslevel and intralevel correlation coefficients (nondimensional) of meridional component for altitude level j, km, of —													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27
0	0.043	0.066	0.084	0.094	0.100	0.100	0.097	0.089	0.066	0.054	0.043	0.031	0.018	0.008
1	0.011	0.034	0.055	0.071	0.078	0.074	0.064	0.054	0.039	0.032	0.026	0.020	0.016	0.004
2	0.076	0.100	0.117	0.128	0.132	0.132	0.121	0.109	0.089	0.071	0.061	0.054	0.043	0.027
3	0.129	0.151	0.166	0.174	0.173	0.175	0.163	0.152	0.131	0.104	0.088	0.072	0.058	0.042
4	0.157	0.177	0.190	0.200	0.200	0.199	0.186	0.176	0.154	0.125	0.104	0.086	0.071	0.054
5	0.169	0.187	0.200	0.210	0.214	0.216	0.203	0.190	0.165	0.134	0.112	0.096	0.081	0.064
6	0.178	0.192	0.205	0.218	0.222	0.225	0.210	0.195	0.169	0.138	0.116	0.100	0.087	0.070
7	0.183	0.196	0.210	0.222	0.225	0.229	0.215	0.196	0.168	0.139	0.117	0.102	0.091	0.074
8	0.186	0.197	0.209	0.218	0.221	0.222	0.208	0.189	0.161	0.131	0.109	0.094	0.085	0.071
9	0.183	0.193	0.204	0.209	0.210	0.210	0.198	0.180	0.156	0.125	0.104	0.091	0.084	0.070
10	0.178	0.187	0.194	0.199	0.201	0.199	0.189	0.172	0.148	0.119	0.101	0.091	0.085	0.071
11	0.167	0.177	0.183	0.186	0.187	0.184	0.174	0.157	0.136	0.110	0.095	0.086	0.081	0.069
12	0.167	0.179	0.185	0.183	0.180	0.170	0.160	0.142	0.123	0.103	0.089	0.084	0.083	0.074
13	0.162	0.177	0.188	0.187	0.182	0.173	0.163	0.143	0.124	0.105	0.092	0.090	0.089	0.077
14	0.175	0.164	0.184	0.193	0.190	0.186	0.178	0.160	0.141	0.121	0.108	0.109	0.106	0.091
15	0.187	0.177	0.172	0.190	0.198	0.198	0.193	0.178	0.161	0.137	0.120	0.121	0.122	0.104
16	0.172	0.194	0.189	0.178	0.194	0.206	0.205	0.194	0.178	0.158	0.142	0.143	0.141	0.122
17	0.167	0.185	0.217	0.207	0.184	0.207	0.214	0.207	0.194	0.176	0.162	0.165	0.161	0.143
18	0.154	0.164	0.192	0.226	0.203	0.192	0.209	0.214	0.207	0.194	0.183	0.190	0.187	0.166
19	0.149	0.156	0.174	0.202	0.233	0.225	0.198	0.211	0.220	0.214	0.214	0.218	0.214	0.193
20	0.128	0.133	0.148	0.166	0.196	0.244	0.227	0.188	0.207	0.220	0.229	0.234	0.232	0.210
21	0.102	0.104	0.115	0.131	0.152	0.205	0.253	0.225	0.195	0.211	0.231	0.243	0.243	0.223
22	0.086	0.089	0.094	0.107	0.120	0.161	0.209	0.242	0.224	0.198	0.221	0.240	0.243	0.227
23	0.075	0.075	0.080	0.084	0.092	0.123	0.165	0.197	0.234	0.219	0.204	0.218	0.227	0.218
24	0.063	0.062	0.064	0.063	0.068	0.093	0.128	0.151	0.198	0.235	0.227	0.205	0.210	0.211
25	0.052	0.052	0.055	0.053	0.053	0.071	0.094	0.116	0.155	0.201	0.242	0.225	0.200	0.196
26	0.044	0.045	0.047	0.044	0.042	0.053	0.072	0.085	0.116	0.161	0.211	0.231	0.217	0.194
27	0.034	0.034	0.039	0.035	0.034	0.039	0.056	0.064	0.089	0.128	0.174	0.204	0.224	0.207

TABLE VIII.- TIME-LAG CORRELATION COEFFICIENTS FOR MONTHLY AND ANNUAL PERIODS AT WALLOPS ISLAND FOR SELECTED ALTITUDE LEVELS

[The coefficients were estimated from a serially completed sample of rawinsonde observations made 4 times daily from 1956 to 1964 at Norfolk and Washington stations]

Period	Time-lag correlation coefficients for –												
	ALTITUDE LEVEL = 0 KM												
	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.624	0.377	0.197	0.081	-0.001	-0.045	-0.049	-0.041	-0.016	-0.006	0.014	0.038	0.0280	0.317
FEB.	0.615	0.349	0.152	0.039	-0.049	-0.082	-0.074	-0.032	-0.023	-0.014	-0.010	-0.016	0.0142	0.543
MAR.	0.622	0.383	0.222	0.117	0.029	0.004	-0.014	-0.002	-0.013	-0.015	-0.023	-0.006	0.0304	0.275
APR.	0.588	0.365	0.222	0.133	0.040	-0.030	-0.048	-0.016	-0.067	-0.074	-0.059	-0.044	0.0177	0.459
MAY	0.571	0.356	0.229	0.144	0.012	-0.029	-0.040	-0.025	-0.051	-0.055	-0.027	0.016	0.0290	0.305
JUNE	0.550	0.336	0.259	0.225	0.102	0.027	0.008	0.039	-0.018	-0.039	-0.019	0.010	0.0493	0.125
JULY	0.489	0.308	0.248	0.211	0.071	0.008	-0.001	0.035	-0.010	-0.025	-0.010	0.047	0.0400	0.196
AUG.	0.552	0.352	0.240	0.178	0.044	-0.040	-0.049	-0.025	-0.066	-0.086	-0.073	-0.028	0.0169	0.472
SEPT.	0.610	0.432	0.308	0.227	0.091	0.005	-0.007	0.004	-0.023	-0.045	-0.040	0.011	0.0463	0.126
OCT.	0.645	0.461	0.339	0.254	0.135	0.057	0.015	-0.009	-0.045	-0.056	-0.064	-0.043	0.0271	0.267
NOV.	0.619	0.378	0.213	0.127	0.041	-0.007	-0.023	-0.016	-0.036	-0.041	-0.040	-0.019	0.0176	0.446
DEC.	0.615	0.373	0.220	0.109	0.011	-0.024	-0.040	-0.028	-0.044	-0.039	-0.035	-0.033	0.0207	0.408
ANNUAL	0.592	0.373	0.237	0.154	0.044	-0.013	-0.027	-0.010	-0.034	-0.041	-0.032	-0.005	0.0170	0.453

Period	Time-lag correlation coefficients for –												
	ALTITUDE LEVEL = 1 KM												
	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.731	0.469	0.262	0.124	0.036	-0.005	-0.013	-0.002	0.015	0.054	0.088	0.100	0.0420	0.158
FEB.	0.677	0.353	0.115	-0.024	-0.100	-0.108	-0.055	0.002	0.024	0.020	0.008	-0.007	0.0475	0.208
MAR.	0.713	0.431	0.235	0.117	0.030	-0.018	-0.025	-0.015	-0.012	-0.017	-0.004	0.024	0.0257	0.318
APR.	0.715	0.459	0.299	0.189	0.071	-0.011	-0.038	-0.023	-0.040	-0.053	-0.035	-0.020	0.0142	0.487
MAY	0.693	0.466	0.322	0.202	0.068	-0.002	-0.003	0.020	-0.001	-0.006	0.024	0.046	0.0370	0.175
JUNE	0.707	0.499	0.390	0.284	0.160	0.091	0.065	0.050	0.005	-0.028	-0.027	-0.020	0.0393	0.115
JULY	0.659	0.423	0.323	0.235	0.088	-0.004	0.005	0.034	-0.005	-0.032	0.006	0.039	0.0498	0.097
AUG.	0.706	0.492	0.360	0.237	0.103	0.023	-0.002	0.001	-0.045	-0.070	-0.057	-0.041	0.0349	0.191
SEPT.	0.760	0.560	0.418	0.282	0.143	0.058	0.006	-0.013	-0.028	-0.035	-0.031	-0.026	0.0276	0.234
OCT.	0.784	0.583	0.430	0.308	0.190	0.110	0.076	0.043	0.001	-0.026	-0.045	-0.049	0.0405	0.094
NOV.	0.744	0.489	0.304	0.174	0.071	0.014	-0.014	-0.017	-0.020	-0.008	0.004	0.002	0.0490	0.104
DEC.	0.694	0.410	0.198	0.069	-0.010	-0.045	-0.053	-0.030	-0.017	-0.014	-0.013	-0.010	0.0119	0.566
ANNUAL	0.715	0.470	0.305	0.183	0.071	0.008	-0.004	0.004	-0.010	-0.018	-0.007	0.003	0.0484	0.421

Period	Time-lag correlation coefficients for –												
	ALTITUDE LEVEL = 2 KM												
	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.750	0.515	0.329	0.197	0.102	0.058	0.039	0.047	0.060	0.084	0.107	0.129	0.0528	0.068
FEB.	0.694	0.402	0.172	0.032	-0.037	-0.047	-0.022	0.033	0.065	0.067	0.045	0.017	0.0481	0.165
MAR.	0.727	0.477	0.288	0.155	0.069	0.034	0.001	-0.006	-0.007	-0.018	-0.016	0.004	0.0480	0.110
APR.	0.723	0.519	0.363	0.260	0.158	0.086	0.048	0.031	0.010	0.000	-0.005	-0.002	0.0591	0.025
MAY	0.724	0.567	0.460	0.355	0.263	0.204	0.177	0.155	0.122	0.095	0.086	0.076	0.0400	0.031
JUNE	0.746	0.593	0.491	0.402	0.305	0.238	0.194	0.137	0.090	0.051	0.019	-0.013	0.0385	0.038
JULY	0.673	0.498	0.398	0.324	0.211	0.156	0.127	0.116	0.075	0.068	0.081	0.085	0.0449	0.046
AUG.	0.724	0.552	0.447	0.363	0.257	0.194	0.139	0.105	0.068	0.047	0.025	0.017	0.0502	0.028
SEPT.	0.756	0.581	0.438	0.320	0.199	0.119	0.057	0.030	0.021	0.016	0.012	0.011	0.0638	0.063
OCT.	0.792	0.632	0.507	0.395	0.276	0.188	0.131	0.085	0.047	0.022	-0.007	-0.024	0.0355	0.078
NOV.	0.784	0.585	0.407	0.265	0.162	0.089	0.032	0.002	-0.017	-0.010	-0.003	0.014	0.0453	0.078
DEC.	0.719	0.471	0.295	0.171	0.071	0.025	0.002	0.005	0.008	0.012	0.008	0.019	0.0853	0.055
ANNUAL	0.734	0.533	0.383	0.270	0.170	0.112	0.077	0.062	0.045	0.036	0.029	0.028	0.0556	0.567

TABLE VIII.- TIME-LAG CORRELATION COEFFICIENTS FOR MONTHLY AND ANNUAL PERIODS AT WALLOPS ISLAND FOR SELECTED ALTITUDE LEVELS – Continued

Period — Time-lag correlation coefficients for –

ALTITUDE LEVEL = 3 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.778	0.583	0.415	0.283	0.192	0.143	0.121	0.114	0.106	0.111	0.114	0.119	0.0418	0.056
FEB.	0.719	0.470	0.267	0.129	0.051	0.036	0.033	0.063	0.081	0.087	0.052	0.024	0.0611	0.059
MAR.	0.745	0.538	0.368	0.232	0.132	0.077	0.057	0.050	0.027	0.012	0.010	0.009	0.0667	0.040
APR.	0.746	0.558	0.406	0.296	0.185	0.111	0.077	0.050	0.014	0.002	-0.002	-0.003	0.0494	0.038
MAY	0.766	0.614	0.508	0.418	0.323	0.267	0.231	0.210	0.164	0.132	0.119	0.119	0.0339	0.030
JUNE	0.768	0.632	0.551	0.479	0.375	0.291	0.244	0.215	0.147	0.083	0.047	0.021	0.0396	0.051
JULY	0.697	0.527	0.447	0.390	0.266	0.184	0.159	0.157	0.089	0.067	0.079	0.115	0.0412	0.044
AUG.	0.747	0.590	0.509	0.420	0.310	0.231	0.197	0.168	0.114	0.085	0.070	0.061	0.0396	0.020
SEPT.	0.775	0.611	0.476	0.355	0.233	0.157	0.097	0.071	0.044	0.024	0.025	0.032	0.0529	0.045
OCT.	0.820	0.675	0.540	0.421	0.307	0.225	0.164	0.121	0.081	0.056	0.031	0.016	0.0463	0.057
NOV.	0.814	0.633	0.456	0.317	0.201	0.117	0.057	0.020	-0.008	-0.009	-0.007	0.006	0.0391	0.096
DEC.	0.760	0.557	0.391	0.259	0.153	0.094	0.056	0.045	0.033	0.030	0.021	0.030	0.0592	0.032
ANNUAL	0.761	0.582	0.444	0.333	0.227	0.161	0.124	0.107	0.074	0.057	0.047	0.046	0.0470	0.056

Period — Time-lag correlation coefficients for –

ALTITUDE LEVEL = 4 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.799	0.613	0.451	0.327	0.238	0.188	0.160	0.150	0.139	0.129	0.126	0.129	0.0376	0.051
FEB.	0.735	0.496	0.310	0.192	0.116	0.077	0.056	0.070	0.081	0.074	0.048	0.013	0.0569	0.040
MAR.	0.764	0.570	0.402	0.280	0.188	0.126	0.100	0.082	0.052	0.027	0.019	0.020	0.0556	0.025
APR.	0.778	0.602	0.454	0.338	0.231	0.155	0.105	0.072	0.032	0.006	0.002	0.006	0.0661	0.086
MAY	0.798	0.641	0.529	0.440	0.349	0.279	0.242	0.216	0.173	0.135	0.119	0.114	0.0330	0.018
JUNE	0.807	0.673	0.594	0.519	0.416	0.326	0.272	0.229	0.163	0.112	0.073	0.050	0.0346	0.042
JULY	0.731	0.575	0.508	0.439	0.308	0.228	0.199	0.189	0.121	0.094	0.102	0.138	0.0364	0.040
AUG.	0.779	0.637	0.550	0.477	0.363	0.280	0.230	0.196	0.137	0.095	0.084	0.081	0.0358	0.022
SEPT.	0.806	0.648	0.512	0.398	0.278	0.197	0.130	0.101	0.066	0.051	0.040	0.033	0.0466	0.042
OCT.	0.838	0.693	0.556	0.440	0.319	0.234	0.178	0.135	0.090	0.061	0.046	0.040	0.0422	0.049
NOV.	0.825	0.643	0.468	0.322	0.203	0.119	0.061	0.021	-0.005	-0.012	-0.007	-0.000	0.0275	0.194
DEC.	0.785	0.589	0.425	0.293	0.191	0.124	0.078	0.053	0.050	0.048	0.046	0.052	0.0516	0.030
ANNUAL	0.787	0.615	0.480	0.372	0.267	0.195	0.151	0.126	0.092	0.068	0.058	0.056	0.0431	0.035

Period — Time-lag correlation coefficients for –

ALTITUDE LEVEL = 5 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.808	0.629	0.475	0.351	0.266	0.208	0.174	0.159	0.142	0.131	0.126	0.117	0.0366	0.041
FEB.	0.748	0.516	0.333	0.216	0.141	0.087	0.058	0.059	0.065	0.061	0.033	-0.003	0.0483	0.060
MAR.	0.782	0.591	0.427	0.303	0.205	0.149	0.109	0.085	0.058	0.038	0.025	0.024	0.0524	0.026
APR.	0.793	0.613	0.456	0.335	0.236	0.166	0.110	0.069	0.043	0.023	0.004	0.001	0.0649	0.087
MAY	0.815	0.672	0.553	0.459	0.371	0.303	0.254	0.221	0.179	0.144	0.118	0.105	0.0323	0.007
JUNE	0.821	0.706	0.623	0.549	0.457	0.373	0.317	0.269	0.205	0.142	0.102	0.074	0.0305	0.038
JULY	0.756	0.613	0.532	0.467	0.351	0.256	0.223	0.199	0.142	0.109	0.128	0.150	0.0338	0.035
AUG.	0.790	0.651	0.571	0.505	0.391	0.296	0.246	0.216	0.151	0.103	0.088	0.091	0.0342	0.027
SEPT.	0.800	0.648	0.521	0.411	0.293	0.205	0.143	0.120	0.081	0.063	0.044	0.026	0.0452	0.040
OCT.	0.835	0.685	0.544	0.423	0.307	0.223	0.161	0.123	0.093	0.067	0.048	0.044	0.0425	0.043
NOV.	0.830	0.641	0.462	0.325	0.215	0.136	0.078	0.037	0.010	0.003	0.002	0.002	0.0745	0.120
DEC.	0.788	0.589	0.428	0.309	0.210	0.144	0.102	0.074	0.057	0.054	0.044	0.051	0.0493	0.023
ANNUAL	0.797	0.630	0.494	0.388	0.287	0.212	0.165	0.136	0.102	0.078	0.063	0.057	0.0415	0.033

TABLE VIII.- TIME-LAG CORRELATION COEFFICIENTS FOR MONTHLY AND ANNUAL PERIODS

AT WALLOPS ISLAND FOR SELECTED ALTITUDE LEVELS – Continued

Time-lag correlation coefficients for –

ALTITUDE LEVEL = 6 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.820	0.641	0.487	0.369	0.283	0.227	0.191	0.169	0.150	0.139	0.133	0.121	0.0354	0.038
FEB.	0.761	0.533	0.361	0.247	0.161	0.107	0.074	0.064	0.062	0.063	0.031	-0.003	0.0465	0.055
MAR.	0.794	0.601	0.442	0.317	0.223	0.167	0.120	0.086	0.050	0.033	0.018	0.019	0.0533	0.037
APR.	0.797	0.611	0.463	0.341	0.238	0.174	0.121	0.076	0.041	0.019	0.013	0.008	0.0571	0.061
MAY	0.831	0.690	0.572	0.471	0.384	0.316	0.263	0.220	0.180	0.146	0.114	0.093	0.0321	0.006
JUNE	0.839	0.727	0.641	0.565	0.476	0.400	0.339	0.282	0.217	0.161	0.118	0.084	0.0288	0.038
JULY	0.772	0.630	0.551	0.480	0.371	0.284	0.243	0.208	0.156	0.127	0.136	0.159	0.0322	0.031
AUG.	0.797	0.669	0.579	0.503	0.402	0.313	0.261	0.232	0.173	0.131	0.107	0.100	0.0322	0.018
SEPT.	0.809	0.668	0.544	0.439	0.330	0.247	0.191	0.158	0.118	0.091	0.059	0.043	0.0397	0.028
OCT.	0.840	0.684	0.542	0.414	0.300	0.220	0.159	0.125	0.097	0.078	0.060	0.051	0.0414	0.037
NOV.	0.824	0.627	0.448	0.312	0.213	0.146	0.097	0.055	0.024	0.015	0.010	0.007	0.0616	0.075
DEC.	0.786	0.585	0.426	0.304	0.213	0.149	0.104	0.080	0.066	0.059	0.047	0.039	0.0489	0.019
ANNUAL	0.806	0.639	0.505	0.397	0.300	0.229	0.180	0.146	0.111	0.088	0.071	0.060	0.0399	0.025

Time-lag correlation coefficients for –

ALTITUDE LEVEL = 7 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.822	0.645	0.497	0.379	0.291	0.232	0.198	0.170	0.150	0.140	0.129	0.113	0.0352	0.033
FEB.	0.779	0.554	0.377	0.257	0.172	0.122	0.094	0.086	0.080	0.071	0.040	-0.000	0.0432	0.061
MAR.	0.811	0.622	0.459	0.334	0.237	0.174	0.127	0.089	0.057	0.035	0.023	0.024	0.0511	0.039
APR.	0.809	0.619	0.469	0.343	0.241	0.177	0.129	0.077	0.037	0.012	0.005	-0.008	0.0501	0.042
MAY	0.839	0.698	0.573	0.471	0.379	0.311	0.260	0.219	0.181	0.144	0.106	0.083	0.0326	0.012
JUNE	0.849	0.735	0.650	0.572	0.482	0.407	0.346	0.293	0.224	0.161	0.121	0.088	0.0283	0.039
JULY	0.788	0.652	0.569	0.491	0.387	0.305	0.257	0.225	0.178	0.151	0.154	0.161	0.0304	0.027
AUG.	0.818	0.689	0.591	0.505	0.416	0.337	0.272	0.223	0.176	0.140	0.117	0.096	0.0315	0.017
SEPT.	0.826	0.685	0.565	0.455	0.351	0.278	0.223	0.190	0.145	0.115	0.075	0.052	0.0365	0.024
OCT.	0.837	0.674	0.527	0.401	0.292	0.214	0.155	0.121	0.094	0.080	0.062	0.049	0.0418	0.033
NOV.	0.824	0.625	0.447	0.314	0.221	0.154	0.106	0.068	0.043	0.033	0.026	0.016	0.0540	0.048
DEC.	0.796	0.592	0.435	0.315	0.224	0.163	0.118	0.096	0.083	0.077	0.069	0.060	0.0450	0.023
ANNUAL	0.816	0.649	0.513	0.403	0.308	0.240	0.190	0.155	0.121	0.097	0.077	0.061	0.0388	0.022

Time-lag correlation coefficients for –

ALTITUDE LEVEL = 8 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.834	0.651	0.497	0.378	0.295	0.234	0.198	0.167	0.147	0.135	0.125	0.114	0.0354	0.032
FEB.	0.786	0.562	0.390	0.265	0.183	0.136	0.107	0.098	0.087	0.070	0.037	-0.002	0.0422	0.060
MAR.	0.825	0.636	0.469	0.341	0.246	0.187	0.142	0.098	0.063	0.042	0.029	0.027	0.0489	0.038
APR.	0.815	0.624	0.468	0.337	0.239	0.177	0.123	0.067	0.031	0.011	-0.002	-0.010	0.0395	0.064
MAY	0.843	0.700	0.573	0.465	0.371	0.300	0.247	0.204	0.169	0.136	0.101	0.076	0.0335	0.015
JUNE	0.848	0.736	0.645	0.565	0.478	0.406	0.346	0.291	0.229	0.171	0.130	0.098	0.0278	0.033
JULY	0.799	0.662	0.575	0.485	0.385	0.306	0.253	0.219	0.173	0.137	0.132	0.128	0.0315	0.016
AUG.	0.823	0.693	0.595	0.503	0.411	0.335	0.269	0.221	0.184	0.144	0.129	0.111	0.0309	0.012
SEPT.	0.845	0.704	0.577	0.471	0.371	0.295	0.240	0.200	0.152	0.117	0.079	0.043	0.0359	0.033
OCT.	0.840	0.673	0.521	0.394	0.290	0.210	0.151	0.116	0.093	0.082	0.066	0.055	0.0417	0.032
NOV.	0.827	0.628	0.457	0.320	0.228	0.165	0.115	0.081	0.053	0.042	0.029	0.014	0.0522	0.045
DEC.	0.810	0.611	0.448	0.324	0.236	0.174	0.130	0.105	0.091	0.083	0.074	0.070	0.0433	0.026
ANNUAL	0.825	0.657	0.518	0.404	0.311	0.244	0.193	0.156	0.123	0.097	0.077	0.060	0.0386	0.027

TABLE VIII.- TIME-LAG CORRELATION COEFFICIENTS FOR MONTHLY AND ANNUAL PERIODS

AT WALLOPS ISLAND FOR SELECTED ALTITUDE LEVELS – Continued

Time-lag correlation coefficients for –

ALTITUDE LEVEL = 9 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.840	0.662	0.508	0.385	0.296	0.233	0.192	0.164	0.148	0.136	0.125	0.114	0.0353	0.032
FEB.	0.795	0.575	0.407	0.282	0.194	0.143	0.116	0.096	0.078	0.060	0.028	-0.005	0.0427	0.050
MAR.	0.833	0.642	0.482	0.360	0.268	0.199	0.145	0.100	0.067	0.045	0.026	0.018	0.0492	0.047
APR.	0.827	0.642	0.486	0.348	0.243	0.168	0.109	0.058	0.027	0.011	0.005	-0.000	0.0516	0.055
MAY	0.837	0.693	0.564	0.447	0.347	0.276	0.223	0.183	0.148	0.116	0.087	0.059	0.0359	0.021
JUNE	0.850	0.726	0.634	0.546	0.455	0.379	0.325	0.276	0.221	0.167	0.130	0.097	0.0286	0.025
JULY	0.805	0.665	0.569	0.483	0.384	0.294	0.243	0.203	0.158	0.129	0.124	0.123	0.0324	0.016
AUG.	0.821	0.693	0.589	0.495	0.398	0.321	0.261	0.213	0.167	0.129	0.115	0.108	0.0320	0.015
SEPT.	0.854	0.715	0.591	0.486	0.385	0.302	0.244	0.191	0.139	0.097	0.057	0.021	0.0384	0.057
OCT.	0.851	0.686	0.537	0.406	0.297	0.210	0.146	0.109	0.080	0.066	0.051	0.046	0.0433	0.046
NOV.	0.843	0.656	0.483	0.347	0.250	0.181	0.132	0.096	0.065	0.043	0.025	0.009	0.0514	0.056
DEC.	0.828	0.628	0.467	0.340	0.249	0.187	0.144	0.118	0.101	0.089	0.077	0.073	0.0417	0.026
ANNUAL	0.832	0.665	0.526	0.410	0.314	0.241	0.190	0.151	0.117	0.091	0.071	0.055	0.0392	0.033

Time-lag correlation coefficients for –

ALTITUDE LEVEL = 10 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.848	0.677	0.532	0.412	0.324	0.255	0.210	0.179	0.158	0.143	0.127	0.111	0.0339	0.025
FEB.	0.808	0.598	0.435	0.312	0.219	0.165	0.131	0.104	0.081	0.059	0.024	-0.007	0.0415	0.044
MAR.	0.844	0.660	0.505	0.379	0.287	0.216	0.159	0.111	0.078	0.052	0.032	0.021	0.0468	0.048
APR.	0.844	0.672	0.513	0.371	0.262	0.177	0.112	0.065	0.036	0.018	0.011	0.008	0.0575	0.090
MAY	0.849	0.699	0.570	0.452	0.347	0.272	0.217	0.174	0.139	0.106	0.079	0.052	0.0368	0.030
JUNE	0.843	0.709	0.610	0.523	0.428	0.349	0.299	0.252	0.202	0.156	0.121	0.092	0.0301	0.019
JULY	0.804	0.659	0.563	0.478	0.376	0.281	0.229	0.193	0.152	0.122	0.117	0.115	0.0333	0.016
AUG.	0.827	0.685	0.576	0.482	0.378	0.304	0.247	0.197	0.146	0.116	0.099	0.089	0.0339	0.018
SEPT.	0.866	0.720	0.596	0.490	0.391	0.311	0.247	0.190	0.139	0.096	0.055	0.017	0.0388	0.064
OCT.	0.865	0.712	0.570	0.438	0.322	0.231	0.163	0.116	0.081	0.059	0.043	0.032	0.0435	0.063
NOV.	0.856	0.680	0.513	0.377	0.276	0.204	0.155	0.118	0.089	0.067	0.046	0.033	0.0442	0.042
DEC.	0.844	0.650	0.485	0.361	0.269	0.209	0.169	0.142	0.119	0.106	0.090	0.081	0.0390	0.028
ANNUAL	0.842	0.677	0.539	0.423	0.323	0.248	0.195	0.153	0.118	0.092	0.070	0.054	0.0388	0.037

Time-lag correlation coefficients for –

ALTITUDE LEVEL = 11 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.857	0.689	0.551	0.440	0.350	0.283	0.231	0.193	0.170	0.154	0.140	0.123	0.0322	0.022
FEB.	0.820	0.618	0.452	0.324	0.229	0.174	0.139	0.111	0.083	0.056	0.024	-0.003	0.0407	0.043
MAR.	0.849	0.675	0.526	0.406	0.315	0.246	0.180	0.130	0.096	0.072	0.053	0.038	0.0418	0.037
APR.	0.851	0.681	0.527	0.393	0.280	0.194	0.126	0.079	0.051	0.032	0.023	0.018	0.0510	0.073
MAY	0.850	0.703	0.578	0.466	0.358	0.274	0.218	0.171	0.132	0.099	0.079	0.053	0.0369	0.034
JUNE	0.844	0.710	0.607	0.514	0.418	0.339	0.284	0.233	0.184	0.137	0.107	0.077	0.0317	0.026
JULY	0.821	0.669	0.566	0.472	0.365	0.272	0.220	0.187	0.148	0.120	0.110	0.107	0.0340	0.016
AUG.	0.842	0.699	0.589	0.494	0.389	0.309	0.251	0.205	0.151	0.112	0.095	0.086	0.0336	0.025
SEPT.	0.878	0.743	0.622	0.515	0.414	0.328	0.258	0.196	0.139	0.094	0.053	0.019	0.0380	0.075
OCT.	0.874	0.728	0.597	0.470	0.355	0.263	0.192	0.141	0.102	0.075	0.058	0.044	0.0396	0.059
NOV.	0.869	0.700	0.538	0.401	0.297	0.224	0.170	0.128	0.097	0.073	0.050	0.035	0.0424	0.047
DEC.	0.857	0.677	0.520	0.401	0.310	0.250	0.207	0.177	0.151	0.133	0.110	0.092	0.0352	0.024
ANNUAL	0.851	0.691	0.556	0.441	0.340	0.263	0.206	0.163	0.125	0.096	0.075	0.058	0.0376	0.040

TABLE VIII.- TIME-LAG CORRELATION COEFFICIENTS FOR MONTHLY AND ANNUAL PERIODS AT WALLOPS ISLAND FOR SELECTED ALTITUDE LEVELS – Continued

Period — Time-lag correlation coefficients for –

ALTITUDE LEVEL = 12 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.865	0.710	0.583	0.478	0.389	0.321	0.265	0.224	0.192	0.168	0.155	0.142	0.0297	0.017
FEB.	0.826	0.632	0.472	0.356	0.269	0.211	0.166	0.133	0.099	0.074	0.044	0.014	0.0457	0.031
MAR.	0.861	0.707	0.567	0.456	0.369	0.298	0.241	0.191	0.150	0.117	0.094	0.077	0.0344	0.023
APR.	0.858	0.706	0.564	0.437	0.329	0.232	0.163	0.113	0.073	0.049	0.041	0.037	0.0440	0.063
MAY	0.855	0.717	0.599	0.496	0.391	0.300	0.237	0.184	0.138	0.108	0.092	0.071	0.0347	0.036
JUNE	0.850	0.715	0.619	0.524	0.425	0.345	0.288	0.241	0.183	0.135	0.106	0.080	0.0313	0.029
JULY	0.836	0.691	0.583	0.485	0.377	0.292	0.233	0.188	0.140	0.107	0.098	0.096	0.0342	0.023
AUG.	0.849	0.718	0.620	0.527	0.421	0.334	0.276	0.227	0.171	0.121	0.099	0.087	0.0320	0.032
SEPT.	0.893	0.768	0.652	0.547	0.445	0.356	0.282	0.220	0.156	0.103	0.065	0.031	0.0349	0.075
OCT.	0.886	0.752	0.625	0.509	0.395	0.304	0.232	0.175	0.124	0.089	0.067	0.046	0.0367	0.062
NOV.	0.872	0.712	0.557	0.425	0.320	0.246	0.193	0.151	0.116	0.093	0.070	0.047	0.0390	0.040
DEC.	0.867	0.711	0.568	0.459	0.367	0.299	0.247	0.210	0.180	0.155	0.129	0.097	0.0320	0.017
ANNUAL	0.860	0.712	0.584	0.475	0.375	0.295	0.235	0.188	0.144	0.110	0.088	0.069	0.0349	0.039

Period — Time-lag correlation coefficients for –

ALTITUDE LEVEL = 13 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.858	0.715	0.590	0.492	0.406	0.337	0.280	0.240	0.209	0.186	0.174	0.164	0.0283	0.019
FEB.	0.826	0.652	0.509	0.406	0.327	0.267	0.223	0.188	0.147	0.112	0.079	0.053	0.0371	0.012
MAR.	0.866	0.732	0.612	0.513	0.432	0.361	0.296	0.241	0.192	0.158	0.136	0.121	0.0293	0.017
APR.	0.852	0.714	0.590	0.476	0.363	0.272	0.204	0.149	0.103	0.073	0.058	0.053	0.0390	0.052
MAY	0.856	0.730	0.627	0.538	0.435	0.349	0.283	0.225	0.168	0.136	0.115	0.091	0.0310	0.033
JUNE	0.851	0.722	0.638	0.553	0.444	0.360	0.305	0.256	0.190	0.136	0.108	0.087	0.0304	0.036
JULY	0.845	0.713	0.610	0.513	0.402	0.310	0.247	0.191	0.134	0.094	0.083	0.079	0.0346	0.041
AUG.	0.855	0.738	0.657	0.572	0.463	0.370	0.308	0.254	0.190	0.135	0.106	0.091	0.0300	0.043
SEPT.	0.900	0.789	0.683	0.579	0.475	0.385	0.312	0.248	0.185	0.131	0.092	0.059	0.0309	0.067
OCT.	0.883	0.763	0.643	0.535	0.420	0.325	0.249	0.191	0.136	0.094	0.064	0.038	0.0361	0.071
NOV.	0.866	0.722	0.583	0.457	0.356	0.279	0.221	0.174	0.136	0.110	0.082	0.060	0.0361	0.035
DEC.	0.861	0.717	0.595	0.500	0.416	0.349	0.294	0.249	0.208	0.176	0.148	0.120	0.0290	0.007
ANNUAL	0.860	0.726	0.612	0.511	0.412	0.330	0.269	0.217	0.166	0.128	0.104	0.085	0.0322	0.034

Period — Time-lag correlation coefficients for –

ALTITUDE LEVEL = 14 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.843	0.704	0.600	0.508	0.433	0.368	0.314	0.273	0.241	0.215	0.193	0.177	0.0264	0.018
FEB.	0.813	0.658	0.539	0.433	0.344	0.286	0.242	0.208	0.174	0.139	0.111	0.085	0.0337	0.010
MAR.	0.850	0.725	0.619	0.533	0.451	0.379	0.317	0.269	0.225	0.189	0.166	0.154	0.0270	0.006
APR.	0.849	0.720	0.605	0.493	0.378	0.273	0.194	0.137	0.088	0.055	0.035	0.026	0.0426	0.078
MAY	0.856	0.755	0.677	0.597	0.502	0.412	0.341	0.289	0.232	0.194	0.167	0.148	0.0257	0.027
JUNE	0.855	0.747	0.677	0.607	0.495	0.402	0.346	0.298	0.223	0.160	0.134	0.116	0.0272	0.041
JULY	0.839	0.729	0.644	0.557	0.444	0.347	0.287	0.232	0.169	0.121	0.112	0.113	0.0307	0.038
AUG.	0.850	0.738	0.671	0.602	0.497	0.399	0.340	0.291	0.220	0.157	0.129	0.114	0.0275	0.041
SEPT.	0.894	0.795	0.702	0.603	0.502	0.413	0.337	0.279	0.222	0.175	0.135	0.103	0.0271	0.050
OCT.	0.882	0.773	0.662	0.551	0.441	0.344	0.269	0.207	0.154	0.113	0.077	0.049	0.0338	0.066
NOV.	0.859	0.725	0.598	0.487	0.386	0.310	0.245	0.193	0.146	0.111	0.080	0.055	0.0351	0.039
DEC.	0.854	0.707	0.592	0.504	0.426	0.362	0.306	0.255	0.200	0.159	0.118	0.088	0.0302	0.019
ANNUAL	0.854	0.731	0.632	0.540	0.442	0.358	0.295	0.244	0.191	0.149	0.122	0.102	0.0298	0.028

TABLE VIII.- TIME-LAG CORRELATION COEFFICIENTS FOR MONTHLY AND ANNUAL PERIODS AT WALLOPS ISLAND FOR SELECTED ALTITUDE LEVELS – Continued

Time-lag correlation coefficients for –

ALTITUDE LEVEL = 15 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.838	0.700	0.595	0.507	0.431	0.375	0.325	0.284	0.246	0.211	0.192	0.180	0.0262	0.020
FEB.	0.805	0.641	0.519	0.430	0.347	0.293	0.249	0.212	0.175	0.138	0.111	0.088	0.0336	0.015
MAR.	0.847	0.719	0.622	0.536	0.458	0.392	0.335	0.290	0.247	0.217	0.197	0.172	0.0255	0.009
APR.	0.856	0.727	0.618	0.514	0.403	0.304	0.223	0.165	0.118	0.080	0.056	0.040	0.0380	0.064
MAY	0.862	0.780	0.711	0.638	0.549	0.469	0.409	0.353	0.288	0.241	0.208	0.178	0.0223	0.027
JUNE	0.861	0.773	0.716	0.646	0.542	0.458	0.395	0.335	0.264	0.196	0.157	0.129	0.0245	0.047
JULY	0.831	0.722	0.651	0.582	0.473	0.373	0.323	0.282	0.207	0.148	0.137	0.136	0.0279	0.031
AUG.	0.844	0.739	0.679	0.615	0.508	0.416	0.357	0.303	0.234	0.181	0.154	0.130	0.0261	0.036
SEPT.	0.888	0.798	0.714	0.624	0.525	0.443	0.379	0.325	0.267	0.219	0.179	0.146	0.0239	0.035
OCT.	0.876	0.777	0.675	0.570	0.466	0.382	0.310	0.247	0.194	0.147	0.105	0.072	0.0301	0.053
NOV.	0.857	0.722	0.598	0.492	0.388	0.310	0.246	0.194	0.139	0.097	0.058	0.031	0.0374	0.055
DEC.	0.856	0.720	0.612	0.530	0.449	0.382	0.323	0.271	0.228	0.181	0.137	0.103	0.0283	0.017
ANNUAL	0.852	0.735	0.642	0.557	0.462	0.383	0.323	0.272	0.217	0.171	0.141	0.117	0.0279	0.029

Time-lag correlation coefficients for –

ALTITUDE LEVEL = 16 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.826	0.680	0.572	0.489	0.421	0.370	0.322	0.284	0.247	0.211	0.186	0.168	0.0268	0.026
FEB.	0.787	0.628	0.518	0.433	0.365	0.307	0.257	0.221	0.189	0.157	0.128	0.103	0.0323	0.025
MAR.	0.821	0.691	0.591	0.518	0.450	0.397	0.342	0.300	0.265	0.239	0.203	0.180	0.0253	0.025
APR.	0.816	0.693	0.595	0.508	0.406	0.316	0.242	0.188	0.140	0.098	0.072	0.053	0.0358	0.043
MAY	0.850	0.767	0.704	0.634	0.554	0.480	0.414	0.360	0.299	0.254	0.215	0.181	0.0220	0.025
JUNE	0.829	0.746	0.700	0.640	0.546	0.468	0.403	0.346	0.278	0.221	0.176	0.139	0.0237	0.040
JULY	0.784	0.691	0.631	0.553	0.442	0.351	0.280	0.236	0.177	0.139	0.119	0.109	0.0305	0.033
AUG.	0.804	0.715	0.659	0.592	0.492	0.420	0.362	0.304	0.238	0.194	0.159	0.121	0.0263	0.033
SEPT.	0.868	0.781	0.712	0.629	0.537	0.458	0.397	0.340	0.285	0.239	0.200	0.168	0.0228	0.026
OCT.	0.856	0.764	0.677	0.585	0.491	0.411	0.340	0.283	0.224	0.175	0.130	0.092	0.0277	0.042
NOV.	0.836	0.710	0.598	0.495	0.395	0.315	0.248	0.198	0.147	0.100	0.059	0.031	0.0371	0.052
DEC.	0.850	0.705	0.598	0.516	0.447	0.393	0.345	0.297	0.256	0.216	0.175	0.142	0.0263	0.014
ANNUAL	0.827	0.714	0.630	0.549	0.462	0.390	0.329	0.280	0.229	0.187	0.152	0.124	0.0274	0.024

Time-lag correlation coefficients for –

ALTITUDE LEVEL = 17 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.808	0.659	0.557	0.491	0.431	0.382	0.336	0.293	0.247	0.223	0.197	0.176	0.0263	0.036
FEB.	0.765	0.593	0.481	0.412	0.341	0.281	0.229	0.195	0.162	0.141	0.117	0.106	0.0343	0.033
MAR.	0.802	0.656	0.555	0.494	0.432	0.376	0.318	0.274	0.245	0.214	0.186	0.166	0.0270	0.033
APR.	0.770	0.654	0.571	0.492	0.399	0.314	0.243	0.199	0.145	0.114	0.084	0.063	0.0351	0.031
MAY	0.823	0.745	0.681	0.615	0.532	0.467	0.404	0.351	0.301	0.256	0.220	0.182	0.0224	0.022
JUNE	0.774	0.708	0.675	0.612	0.525	0.466	0.403	0.343	0.282	0.237	0.185	0.156	0.0238	0.040
JULY	0.711	0.636	0.583	0.501	0.395	0.326	0.261	0.196	0.133	0.112	0.082	0.061	0.0353	0.045
AUG.	0.739	0.670	0.627	0.560	0.464	0.403	0.341	0.292	0.235	0.190	0.154	0.124	0.0274	0.040
SEPT.	0.826	0.746	0.693	0.622	0.532	0.470	0.412	0.353	0.302	0.259	0.224	0.196	0.0220	0.021
OCT.	0.819	0.730	0.666	0.593	0.497	0.432	0.370	0.319	0.252	0.203	0.160	0.120	0.0257	0.032
NOV.	0.807	0.686	0.587	0.483	0.391	0.312	0.239	0.190	0.140	0.107	0.079	0.053	0.0357	0.033
DEC.	0.833	0.692	0.581	0.503	0.444	0.394	0.349	0.302	0.260	0.222	0.186	0.157	0.0260	0.023
ANNUAL	0.790	0.681	0.605	0.531	0.449	0.385	0.325	0.276	0.225	0.190	0.156	0.130	0.0277	0.026

TABLE VIII.- TIME-LAG CORRELATION COEFFICIENTS FOR MONTHLY AND ANNUAL PERIODS

AT WALLOPS ISLAND FOR SELECTED ALTITUDE LEVELS – Continued

Time-lag correlation coefficients for –

ALTITUDE LEVEL = 18 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.803	0.644	0.545	0.477	0.416	0.366	0.327	0.290	0.251	0.223	0.194	0.176	0.0267	0.041
FEB.	0.745	0.561	0.447	0.384	0.329	0.282	0.235	0.199	0.164	0.153	0.153	0.142	0.0333	0.057
MAR.	0.763	0.619	0.531	0.472	0.403	0.356	0.300	0.252	0.211	0.189	0.171	0.169	0.0287	0.043
APR.	0.743	0.610	0.537	0.459	0.381	0.308	0.245	0.202	0.160	0.124	0.092	0.076	0.0347	0.028
MAY	0.789	0.726	0.669	0.615	0.534	0.477	0.412	0.363	0.309	0.273	0.227	0.203	0.0219	0.031
JUNE	0.708	0.641	0.623	0.577	0.494	0.443	0.390	0.335	0.282	0.241	0.190	0.161	0.0247	0.057
JULY	0.598	0.519	0.510	0.441	0.324	0.257	0.202	0.156	0.091	0.033	0.033	0.062	0.0440	0.069
AUG.	0.645	0.561	0.557	0.500	0.390	0.333	0.301	0.287	0.205	0.156	0.139	0.133	0.0304	0.070
SEPT.	0.782	0.715	0.667	0.603	0.527	0.472	0.416	0.367	0.313	0.278	0.243	0.220	0.0216	0.033
OCT.	0.786	0.707	0.645	0.589	0.503	0.451	0.385	0.339	0.287	0.240	0.193	0.161	0.0240	0.031
NOV.	0.768	0.635	0.539	0.459	0.378	0.321	0.262	0.219	0.172	0.141	0.110	0.086	0.0330	0.021
DEC.	0.818	0.684	0.580	0.499	0.447	0.408	0.360	0.314	0.270	0.229	0.192	0.165	0.0255	0.030
ANNUAL	0.746	0.635	0.571	0.506	0.427	0.373	0.320	0.277	0.226	0.190	0.161	0.146	0.0281	0.045

Time-lag correlation coefficients for –

ALTITUDE LEVEL = 19 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.776	0.609	0.505	0.446	0.393	0.353	0.314	0.286	0.260	0.241	0.204	0.180	0.0271	0.061
FEB.	0.738	0.557	0.448	0.388	0.331	0.285	0.244	0.226	0.205	0.181	0.156	0.134	0.0322	0.064
MAR.	0.742	0.599	0.510	0.456	0.390	0.343	0.301	0.270	0.223	0.204	0.184	0.178	0.0284	0.057
APR.	0.708	0.602	0.542	0.472	0.406	0.355	0.303	0.255	0.216	0.184	0.151	0.132	0.0296	0.050
MAY	0.716	0.663	0.631	0.560	0.482	0.446	0.389	0.326	0.286	0.255	0.211	0.186	0.0240	0.052
JUNE	0.613	0.553	0.555	0.516	0.433	0.381	0.350	0.309	0.254	0.207	0.159	0.170	0.0276	0.087
JULY	0.477	0.403	0.401	0.371	0.253	0.173	0.154	0.143	0.073	-0.001	0.001	0.056	0.0488	0.095
AUG.	0.537	0.444	0.471	0.434	0.335	0.284	0.251	0.242	0.190	0.140	0.132	0.146	0.0337	0.109
SEPT.	0.749	0.685	0.653	0.594	0.521	0.470	0.413	0.384	0.329	0.286	0.256	0.224	0.0216	0.047
OCT.	0.761	0.680	0.632	0.567	0.493	0.450	0.396	0.355	0.304	0.265	0.223	0.199	0.0230	0.042
NOV.	0.745	0.607	0.517	0.449	0.377	0.327	0.275	0.236	0.194	0.163	0.139	0.109	0.0315	0.038
DEC.	0.820	0.678	0.570	0.499	0.465	0.433	0.391	0.351	0.298	0.254	0.218	0.189	0.0239	0.042
ANNUAL	0.698	0.590	0.536	0.479	0.406	0.358	0.315	0.282	0.236	0.198	0.169	0.159	0.0284	0.067

Time-lag correlation coefficients for –

ALTITUDE LEVEL = 20 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.769	0.590	0.484	0.428	0.375	0.346	0.315	0.290	0.261	0.232	0.207	0.184	0.0275	0.070
FEB.	0.715	0.547	0.467	0.411	0.358	0.317	0.271	0.245	0.212	0.182	0.161	0.134	0.0311	0.066
MAR.	0.715	0.584	0.513	0.442	0.382	0.346	0.306	0.283	0.247	0.226	0.211	0.192	0.0276	0.071
APR.	0.662	0.564	0.503	0.451	0.395	0.357	0.314	0.273	0.240	0.202	0.172	0.154	0.0289	0.075
MAY	0.642	0.569	0.563	0.512	0.427	0.413	0.359	0.311	0.268	0.241	0.211	0.195	0.0259	0.084
JUNE	0.529	0.456	0.461	0.448	0.354	0.305	0.293	0.270	0.210	0.162	0.163	0.166	0.0315	0.117
JULY	0.371	0.254	0.308	0.306	0.173	0.109	0.105	0.138	0.059	-0.027	0.005	0.071	0.0507	0.142
AUG.	0.440	0.341	0.378	0.367	0.254	0.224	0.187	0.209	0.136	0.082	0.091	0.141	0.0402	0.136
SEPT.	0.669	0.629	0.618	0.576	0.498	0.472	0.414	0.386	0.327	0.301	0.250	0.245	0.0220	0.077
OCT.	0.721	0.661	0.625	0.579	0.509	0.474	0.425	0.391	0.334	0.311	0.274	0.238	0.0213	0.062
NOV.	0.738	0.619	0.539	0.473	0.407	0.368	0.324	0.278	0.246	0.234	0.204	0.193	0.0268	0.057
DEC.	0.818	0.697	0.607	0.553	0.512	0.479	0.445	0.411	0.368	0.324	0.286	0.258	0.0203	0.049
ANNUAL	0.649	0.543	0.505	0.462	0.387	0.351	0.313	0.291	0.242	0.206	0.186	0.181	0.0284	0.094

TABLE VIII.- TIME-LAG CORRELATION COEFFICIENTS FOR MONTHLY AND ANNUAL PERIODS AT WALLOPS ISLAND FOR SELECTED ALTITUDE LEVELS – Continued

Period — Time-lag correlation coefficients for –

ALTITUDE LEVEL = 21 KM

	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.788	0.639	0.517	0.448	0.393	0.345	0.313	0.287	0.257	0.235	0.211	0.194	0.0268	0.056
FEB.	0.716	0.544	0.450	0.407	0.347	0.320	0.276	0.258	0.220	0.178	0.155	0.143	0.0310	0.071
MAR.	0.694	0.584	0.512	0.457	0.398	0.357	0.314	0.300	0.271	0.250	0.228	0.204	0.0266	0.080
APR.	0.667	0.566	0.511	0.477	0.411	0.385	0.334	0.312	0.290	0.257	0.228	0.223	0.0258	0.089
MAY	0.588	0.522	0.498	0.464	0.407	0.362	0.311	0.299	0.251	0.223	0.179	0.184	0.0283	0.101
JUNE	0.485	0.404	0.419	0.433	0.317	0.275	0.268	0.280	0.193	0.137	0.154	0.179	0.0333	0.135
JULY	0.300	0.198	0.253	0.278	0.127	0.080	0.064	0.137	0.042	-0.027	0.005	0.121	0.0545	0.165
AUG.	0.387	0.307	0.319	0.347	0.217	0.198	0.173	0.237	0.111	0.089	0.077	0.150	0.0422	0.155
SEPT.	0.622	0.577	0.550	0.526	0.447	0.424	0.369	0.354	0.296	0.277	0.231	0.234	0.0243	0.095
OCT.	0.704	0.663	0.630	0.596	0.524	0.516	0.457	0.427	0.373	0.355	0.299	0.284	0.0196	0.074
NOV.	0.722	0.633	0.558	0.514	0.455	0.425	0.358	0.329	0.288	0.264	0.233	0.205	0.0244	0.063
DEC.	0.837	0.709	0.625	0.579	0.542	0.506	0.469	0.436	0.395	0.358	0.321	0.286	0.0187	0.049
ANNUAL	0.626	0.529	0.487	0.461	0.382	0.349	0.309	0.305	0.249	0.216	0.193	0.201	0.0281	0.108

Period — Time-lag correlation coefficients for –

ALTITUDE LEVEL = 22 KM

	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.811	0.654	0.545	0.468	0.407	0.365	0.334	0.316	0.278	0.252	0.229	0.208	0.0253	0.053
FEB.	0.714	0.559	0.473	0.407	0.343	0.303	0.259	0.242	0.216	0.175	0.152	0.135	0.0315	0.063
MAR.	0.697	0.575	0.506	0.465	0.422	0.389	0.361	0.339	0.307	0.295	0.265	0.249	0.0243	0.094
APR.	0.683	0.577	0.520	0.495	0.440	0.416	0.372	0.363	0.340	0.315	0.285	0.281	0.0230	0.100
MAY	0.569	0.516	0.465	0.444	0.380	0.363	0.318	0.320	0.264	0.222	0.189	0.208	0.0281	0.114
JUNE	0.509	0.399	0.386	0.387	0.293	0.255	0.252	0.277	0.200	0.173	0.165	0.185	0.0333	0.138
JULY	0.287	0.146	0.186	0.247	0.114	0.087	0.081	0.169	0.034	-0.010	0.031	0.127	0.0515	0.191
AUG.	0.410	0.299	0.291	0.330	0.219	0.201	0.178	0.218	0.123	0.100	0.087	0.165	0.0415	0.156
SEPT.	0.594	0.549	0.523	0.503	0.420	0.418	0.355	0.357	0.281	0.283	0.242	0.257	0.0247	0.110
OCT.	0.733	0.677	0.640	0.613	0.550	0.532	0.488	0.460	0.404	0.384	0.332	0.325	0.0180	0.071
NOV.	0.736	0.652	0.575	0.529	0.467	0.440	0.378	0.342	0.292	0.276	0.245	0.227	0.0234	0.059
DEC.	0.838	0.714	0.619	0.567	0.530	0.499	0.480	0.462	0.427	0.392	0.352	0.321	0.0179	0.061
ANNUAL	0.632	0.526	0.478	0.455	0.382	0.356	0.321	0.322	0.264	0.238	0.215	0.224	0.0271	0.114

Period — Time-lag correlation coefficients for –

ALTITUDE LEVEL = 23 KM

	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.821	0.681	0.577	0.512	0.459	0.416	0.378	0.351	0.312	0.283	0.254	0.236	0.0229	0.048
FEB.	0.718	0.564	0.486	0.430	0.374	0.331	0.303	0.270	0.223	0.194	0.175	0.158	0.0295	0.067
MAR.	0.760	0.635	0.553	0.509	0.470	0.443	0.410	0.380	0.343	0.320	0.289	0.274	0.0217	0.076
APR.	0.665	0.575	0.515	0.509	0.459	0.440	0.403	0.391	0.342	0.320	0.297	0.303	0.0222	0.106
MAY	0.595	0.529	0.475	0.448	0.391	0.365	0.327	0.327	0.250	0.219	0.185	0.196	0.0280	0.104
JUNE	0.552	0.427	0.394	0.398	0.314	0.285	0.262	0.282	0.218	0.191	0.162	0.184	0.0321	0.127
JULY	0.321	0.171	0.162	0.225	0.098	0.083	0.076	0.147	0.053	0.024	0.020	0.087	0.0610	0.154
AUG.	0.429	0.316	0.292	0.320	0.213	0.200	0.194	0.238	0.125	0.116	0.095	0.167	0.0405	0.154
SEPT.	0.597	0.555	0.505	0.478	0.398	0.404	0.336	0.340	0.284	0.262	0.223	0.237	0.0258	0.107
OCT.	0.744	0.677	0.628	0.597	0.543	0.522	0.482	0.455	0.404	0.378	0.338	0.334	0.0182	0.072
NOV.	0.762	0.653	0.593	0.559	0.499	0.460	0.400	0.360	0.302	0.290	0.265	0.250	0.0221	0.056
DEC.	0.850	0.721	0.626	0.571	0.536	0.512	0.489	0.467	0.432	0.400	0.369	0.343	0.0173	0.061
ANNUAL	0.651	0.542	0.484	0.463	0.396	0.372	0.338	0.334	0.274	0.250	0.223	0.231	0.0262	0.116

TABLE VIII.- TIME-LAG CORRELATION COEFFICIENTS FOR MONTHLY AND ANNUAL PERIODS AT WALLOPS ISLAND FOR SELECTED ALTITUDE LEVELS – Continued

Period — Time-lag correlation coefficients for –

ALTITUDE LEVEL = 24 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.839	0.704	0.608	0.547	0.490	0.445	0.405	0.367	0.331	0.300	0.281	0.256	0.0214	0.041
FEB.	0.753	0.594	0.500	0.444	0.386	0.349	0.319	0.282	0.235	0.213	0.190	0.167	0.0281	0.060
MAR.	0.779	0.658	0.570	0.534	0.496	0.469	0.427	0.411	0.373	0.348	0.321	0.293	0.0202	0.073
APR.	0.707	0.621	0.583	0.552	0.481	0.465	0.425	0.415	0.377	0.345	0.315	0.316	0.0204	0.089
MAY	0.629	0.554	0.489	0.469	0.405	0.377	0.347	0.326	0.270	0.244	0.221	0.224	0.0263	0.099
JUNE	0.568	0.449	0.408	0.374	0.337	0.309	0.274	0.268	0.227	0.210	0.194	0.208	0.0307	0.126
JULY	0.369	0.208	0.168	0.197	0.105	0.094	0.110	0.140	0.072	0.058	0.026	0.068	0.0568	0.148
AUG.	0.472	0.328	0.282	0.297	0.215	0.208	0.184	0.196	0.129	0.111	0.092	0.110	0.0419	0.137
SEPT.	0.602	0.541	0.494	0.465	0.407	0.403	0.334	0.341	0.275	0.261	0.222	0.228	0.0260	0.108
OCT.	0.756	0.680	0.633	0.603	0.545	0.522	0.477	0.451	0.400	0.383	0.351	0.328	0.0181	0.068
NOV.	0.786	0.677	0.616	0.581	0.517	0.480	0.427	0.385	0.334	0.319	0.294	0.270	0.0206	0.051
DEC.	0.854	0.719	0.624	0.579	0.550	0.530	0.510	0.478	0.441	0.407	0.379	0.357	0.0168	0.062
ANNUAL	0.676	0.561	0.498	0.470	0.411	0.387	0.353	0.338	0.289	0.267	0.240	0.236	0.0253	0.112

Period — Time-lag correlation coefficients for –

ALTITUDE LEVEL = 25 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.863	0.743	0.649	0.584	0.528	0.487	0.446	0.406	0.365	0.334	0.308	0.280	0.0193	0.032
FEB.	0.778	0.627	0.535	0.473	0.399	0.348	0.314	0.284	0.247	0.211	0.189	0.172	0.0275	0.046
MAR.	0.803	0.679	0.597	0.555	0.512	0.475	0.449	0.433	0.396	0.374	0.354	0.327	0.0189	0.071
APR.	0.757	0.667	0.603	0.576	0.519	0.489	0.454	0.439	0.394	0.358	0.329	0.306	0.0192	0.071
MAY	0.683	0.598	0.532	0.502	0.450	0.421	0.380	0.349	0.297	0.269	0.257	0.258	0.0238	0.086
JUNE	0.650	0.513	0.445	0.410	0.388	0.366	0.318	0.296	0.249	0.233	0.204	0.200	0.0281	0.103
JULY	0.434	0.244	0.168	0.175	0.099	0.103	0.105	0.109	0.049	0.041	0.017	0.030	0.0612	0.116
AUG.	0.519	0.370	0.294	0.302	0.245	0.240	0.202	0.199	0.149	0.139	0.108	0.131	0.0390	0.130
SEPT.	0.630	0.544	0.504	0.480	0.405	0.395	0.330	0.319	0.270	0.247	0.218	0.214	0.0264	0.097
OCT.	0.770	0.695	0.635	0.595	0.541	0.513	0.476	0.449	0.412	0.392	0.361	0.330	0.0179	0.066
NOV.	0.809	0.703	0.635	0.597	0.542	0.500	0.448	0.409	0.356	0.327	0.296	0.267	0.0197	0.042
DEC.	0.867	0.738	0.640	0.590	0.566	0.552	0.531	0.499	0.463	0.429	0.397	0.369	0.0159	0.060
ANNUAL	0.714	0.593	0.520	0.487	0.433	0.407	0.371	0.349	0.304	0.279	0.253	0.240	0.0241	0.104

Period — Time-lag correlation coefficients for –

ALTITUDE LEVEL = 26 KM

Period	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.885	0.782	0.698	0.640	0.582	0.531	0.485	0.443	0.396	0.356	0.320	0.287	0.0176	0.015
FEB.	0.816	0.678	0.577	0.507	0.434	0.379	0.336	0.298	0.265	0.229	0.208	0.175	0.0257	0.031
MAR.	0.836	0.712	0.633	0.591	0.543	0.503	0.470	0.445	0.415	0.389	0.364	0.342	0.0177	0.057
APR.	0.789	0.685	0.608	0.571	0.517	0.477	0.443	0.421	0.376	0.351	0.314	0.296	0.0196	0.060
MAY	0.731	0.624	0.555	0.517	0.470	0.428	0.383	0.356	0.310	0.286	0.258	0.263	0.0229	0.072
JUNE	0.718	0.590	0.507	0.469	0.423	0.386	0.344	0.311	0.272	0.242	0.215	0.194	0.0261	0.073
JULY	0.514	0.313	0.215	0.182	0.122	0.115	0.103	0.076	0.036	0.024	0.004	-0.006	0.0572	0.093
AUG.	0.584	0.389	0.306	0.287	0.219	0.203	0.191	0.181	0.147	0.132	0.129	0.138	0.0392	0.117
SEPT.	0.674	0.563	0.505	0.478	0.406	0.380	0.326	0.306	0.275	0.263	0.240	0.224	0.0259	0.089
OCT.	0.800	0.699	0.639	0.599	0.548	0.531	0.508	0.481	0.447	0.418	0.377	0.354	0.0168	0.067
NOV.	0.844	0.741	0.669	0.619	0.570	0.525	0.471	0.421	0.378	0.340	0.306	0.277	0.0186	0.029
DEC.	0.883	0.760	0.659	0.597	0.557	0.538	0.519	0.493	0.458	0.431	0.404	0.381	0.0158	0.055
ANNUAL	0.756	0.628	0.548	0.505	0.449	0.416	0.382	0.353	0.315	0.288	0.262	0.244	0.0232	0.092

TABLE VIII.- TIME-LAG CORRELATION COEFFICIENTS FOR MONTHLY AND ANNUAL PERIODS AT WALLOPS ISLAND FOR SELECTED ALTITUDE LEVELS – Concluded

Period	Time-lag correlation coefficients for –												
	ALTITUDE LEVEL = 27 KM												
	LAG= 6	12	18	24	30	36	42	48	54	60	66	72	ALPHA	RMS
JAN.	0.904	0.815	0.732	0.667	0.608	0.556	0.506	0.460	0.412	0.369	0.325	0.284	0.0167	0.008
FEB.	0.839	0.702	0.592	0.504	0.425	0.368	0.320	0.280	0.246	0.210	0.183	0.162	0.0267	0.017
MAR.	0.853	0.737	0.653	0.608	0.559	0.514	0.477	0.446	0.416	0.383	0.358	0.337	0.0174	0.045
APR.	0.824	0.705	0.626	0.568	0.513	0.468	0.433	0.404	0.371	0.338	0.314	0.286	0.0197	0.048
MAY	0.766	0.655	0.579	0.524	0.476	0.442	0.401	0.373	0.343	0.311	0.287	0.273	0.0216	0.066
JUNE	0.753	0.610	0.516	0.463	0.397	0.353	0.322	0.288	0.247	0.220	0.203	0.186	0.0272	0.059
JULY	0.587	0.352	0.238	0.190	0.133	0.090	0.073	0.064	0.033	0.006	-0.002	-0.017	0.0491	0.107
AUG.	0.647	0.447	0.346	0.301	0.255	0.235	0.219	0.189	0.158	0.153	0.139	0.140	0.0367	0.101
SEPT.	0.721	0.599	0.536	0.491	0.452	0.412	0.371	0.355	0.334	0.310	0.284	0.280	0.0228	0.088
OCT.	0.832	0.730	0.660	0.613	0.567	0.537	0.507	0.478	0.445	0.413	0.381	0.349	0.0165	0.053
NOV.	0.881	0.786	0.714	0.659	0.610	0.559	0.508	0.459	0.410	0.365	0.325	0.289	0.0169	0.016
DEC.	0.892	0.774	0.673	0.602	0.551	0.522	0.502	0.479	0.448	0.419	0.387	0.361	0.0162	0.047
ANNUAL	0.792	0.659	0.572	0.516	0.462	0.421	0.386	0.356	0.322	0.291	0.265	0.244	0.0226	0.079

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